JULY, 1951

Traffic Engineering

New Expressway in Kansas City, Missouri

- Traffic Engineering Becomes of Age in Kansas City
- Tests of Highway Signs for United Nations
- Chicago's Mobile Traffic Survey Unit
- Traffic Engineering in Civil Defense
- Hourly and Daily Variation in Vehicle Speeds on a Rural Highway

Official Publication of the Institute of Traffic Engineers

Perfect Combination!

Eaglelux Traffic Signals

plus the correct Eagle Traffic Controller to fit the intersection, successfully solves any Traffic Control Problem!

Plan your traffic equipment needs to fit your individual problem. Our traffic equipment is desgned to satisfactorily solve your individual problems. That is why we do our utmost to fit each intersection with just the right equipment.

It has been Eagle's policy from the beginning to give the customer the BEST IN SERVICE as well as the BEST IN PRODUCTS. The company itself is located centrally, cutting hours, even days, from transportation and correspondence time. Our representatives radiate from the centralized location to strategic locations throughout the United States.

We like to feel that you're already acquainted with your nearest Eagle Representative; if you are not, call on him. He is always available to be challenged with your traffic problems and to make available to you the best in traffic control equipment.

H. B. Allen, Inc.
4024 Grand Ave.
Des Moines 12, Iowa

C. B. Anderson Co.
712 Oil Capitol Bldg.
Tulsa 3, Oklahoma

Harry Q. Beven
Room 403
111 East Wisconsin Ave.
Milwaukee 2, Wisconsin

Carrier & Gable, Inc.
414-Murphy Bldg.
155 West Congress St.
Detroit 26, Michigan

Thomas B. Combs Co.
505 Bona Allen Bldg.
133 Luckie St., N.W.
Atlanta 3, Georgia

Harry Corneil
Robert E. Lee Hotel
Jackson, Mississippi

Fred H. Gades Sales Co.
P. O. Box 233
Topeka, Kansas

Griswold Signal Co.
1706 Linden Ave.
Minneapolis 3, Minn.

Bernard S. Hundley
Hundley Company
P. O. Box 3916,
Glassel Station
Los Angeles 65, Calif.

Koontz Equipment Corp.
325 Ohio River Blvd.
Emsworth (PGH 2), Penn.

R. W. LeBaron, Inc.
No. 9 Swan Place
off Massachusetts Ave.
Arlington, Massachusetts

Maxson Company
1714 Laws Street
Dallas 2, Texas

Douglas J. Munhall Co.
170 Franklin Street
Buffalo 2, New York

Sherman C. Nabaum Co.
4777 South 13th East
Salt Lake City 7, Utah

Novelty Electric Co.
10th & Cherry Streets
Philadelphia, Pennsylvania

L. J. Proby
422 Smith Tower
Seattle 4, Washington

P. A. Rafferty
7415 Hiawatha Ave.
St. Louis 17, Missouri

Sign Animation Corp.
229 West 42nd Street
New York 18, New York

Ward Engineering Co., Inc.
1217 West Central Ave.
Orlando, Florida

G. E. Williams
4328 North Elston Ave.
Chicago 41, Illinois

Export Agent:
13 EAST 40th ST.,
NEW YORK 16, N. Y.

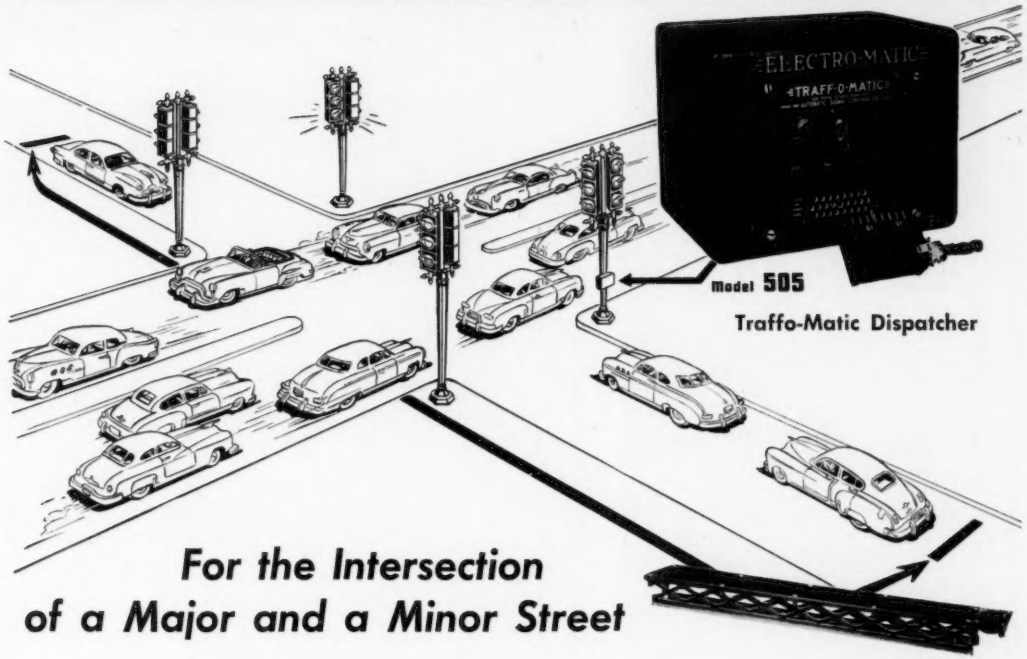
In Canada:
The Northern Electric Co.
Belleville, Ontario.

EAGLE SIGNAL
CORPORATION Moline, Illinois

A QUARTER CENTURY OF TRAFFIC CONTROL EXPERIENCE!

TRAFFO-MATIC

SEMI-ACTUATED CONTROL



Model **505**
Traffo-Matic Dispatcher

For the Intersection of a Major and a Minor Street

- Detectors on minor street only.
- Green light remains on major street except when called by minor street.
- Memory and time-extension on minor street.
- All intervals independently dial-adjusted.
- Flexible, accurate electronic control.
- Coordination with adjacent intersections.

Type HR
Pressure Sensitive Detector

Automatic Signal Division
EASTERN INDUSTRIES INCORPORATED
In Canada, write to: Northern Electric Co., Ltd., Belleville, Ontario

TRAFFIC ACTUATED ®

Send for literature on the MODEL 505

NORWALK, CONNECTICUT

Let's reflect a moment...

SAVE TIME & MONEY
USING THE

Cataphote
BEADED SIGN KIT

Reflectorize and give extra life to your signs at ½ the usual cost. A brand new, extra low cost, easy-to-apply method of reflectorizing your signs. No special equipment, no special training. Virtually foolproof. Now you can reflectorize your own signs in your own shop. Write for full info and prices.

Cataphote
Corporation
TOLEDO 10, OHIO

Rush FREE descriptive pamphlet and full price list on CATAPHOTE Beaded Sign Kit and its low cost advantages to me:

Name_____
Title_____
City_____
State_____
MFRS. AGENTS INQUIRIES INVITED!

REFLECTS THE CRAFTSMAN'S SKILL

One of the Answers to Your Traffic Control Problems

the NEW IMPROVED

4000 HOUR MAGNOTRONIC TRAFFIC SIGNAL LAMP

- THE ULTIMATE IN QUALITY
- GUIDE TRAFFIC SAFELY
- DEPENDABLE TROUBLE-FREE SERVICE
- LONG LIFE REDUCES MAINTENANCE COSTS
- LOWEST TRUE COST
- DESIGNED TO YIELD YOU AN ADEQUATE RETURN ON YOUR INVESTMENT

MAGNOTRONIC 4000 hour Traffic Signal Lamps are available in wattages of 40, 60, 67, and 100. The same lamp with a designed life of 5000 or 6000 hours can be had at no extra cost.

A complete line of general service lamps designed for 2000 or more hours of service including STREET SERIES, MULTIPLE SERIES, SPOTLIGHT, FLOOD LIGHT and HIGH VOLTAGE SERVICE.

TECHNICAL KNOWLEDGE ACCUMULATED BY OUR LABORATORIES THROUGH YEARS OF PRACTICAL AND RESEARCH EXPERIENCE STAND BACK OF OUR PRODUCT.

COMPANY REPRESENTATIVES IN PRINCIPAL CITIES

INDUSTRIAL ELECTRONICS CORP.
80 BANK STREET, NEWARK 2, N. J.

Traffic Engineering

OFFICIAL PUBLICATION OF THE INSTITUTE OF TRAFFIC ENGINEERS

VOLUME XXI | JULY, 1951 | NUMBER 10

COVER: View of new expressway with downtown district of Kansas City, Missouri, in background. See article by T. J. Seburn.

Traffic Engineering is that phase of engineering which deals with the planning and geometric design of streets, highways, and abutting lands, and with traffic operation thereon, as their use is related to the safe, convenient, and economic transportation of persons and goods.

INSTITUTE OFFICERS

HARRY E. NEAL
President

NATHAN CHERNIACK
Vice-President

F. B. CRANDALL
Vice-President

HARRY PORTER JR.
Secretary-Treasurer

PUBLICATION STAFF

FRED W. HURD
Editor

ANN S. LINCOLN
Managing Editor

Associate Technical Editors
ROBERT S. HOLMES, EDMUND R. RICKER
MARTIN C. STARK

Associate Editors
H. A. BARNES — R. H. HARLESTON JR.
J. A. CARROTHERS — C. S. LECRAW JR.
C. C. CLARK — EUGENE MAIER
ARTHUR C. GIBSON — S. T. SIEGEL
MARGARET WOOLVERTON

May We Offer . . .

Traffic Engineering Becomes of Age in Kansas City 331
Thomas J. Seburn

Tests of Highway Signs for United Nations 336
Charles R. Waters and Gilbert W. Treble

Chicago's Mobile Traffic Survey Unit 339
Theodore M. Vanderstempel

Traffic Engineering in Civil Defense 340
B. A. Lefeve

Hourly and Daily Variation in Vehicle Speeds on a Rural Highway 343
Robert L. Meyer

Reference Notes 346

Traffic News 347

Looking Ahead 349

Index to Advertisers ..... **Inside Back Cover**

Published Monthly by the

Institute of Traffic Engineers

PUBLICATION office:
Interstate Printing Corp.
400 Watchung Avenue
Plainfield, New Jersey

EDITORIAL AND ADVERTISING offices:
Strathcona Hall
New Haven 11, Connecticut

Entered as second-class matter November 7, 1941, at the Post Office at Plainfield, New Jersey, under Act of March 3, 1879. ¶Single copies 40 cents, subscription price $3.50 per year in the United States; $2.00 per year to members. Other publications of the **Institute of Traffic Engineers** include Annual Proceedings, Traffic Engineering Handbook and Technical Bulletins. ¶**The Institute is not responsible for any statements made or opinions expressed in its publications.** Permission to reprint contents with customary credit line is given unless otherwise stated.

Bird's-eye view of a *solved* parking problem!

Another city — Temple, Texas — turns to DUALS ...installs 278 in Texas' largest, municipally owned, metered parking lot

PROGRESSIVE Texas cities take a back seat to none—especially when it comes to civic improvements. No wonder, then, that Temple officials decided on *Dual Automatic Parking Meters* for their new municipal parking lot.

For Duals have the *extra* advantages that do so much to ease traffic control and parking problems—in cities from coast to coast.

Duals operate simply, automatically, dependably—in any weather. And with Dual *gearshift* meters, you get *flexible* parking control. Time and coin conversions can be made as conditions require—instantly. When it comes to low maintenance, Duals have set records time after time!

If your community is challenged by parking problems—*meet* them with Duals. On-street or off-street, Duals can do the job. Get the facts about their many advanced operating features. Send for Bulletin DU-504 for on-street parking; Bulletin DU-505 for off-street parking.

Aerial view of Temple, Texas, municipal parking lot—the largest such metered facility in the state.

THE DUAL PARKING METER COMPANY
A subsidiary of The Union Metal Manufacturing Company
Canton 2, Ohio

Frankly Speaking

No traffic engineer should make a positive recommendation without complete and accurate facts of the problem which he is studying. To arrive at any conclusion, considerable time must be spent to determine this information. Just as doctors study the facts concerning a patient's case history before performing an operation, so must the engineer make adequate studies to determine what is needed to aid the fluidity and promote safety at any given point in the street and highway system. He must go into these studies with an open mind, an armload of statistics, and the knowledge he possesses from his engineering training.

Unfortunately many good improvements reach this point and stop. Frequently we fail to show and prove the financial feasibility of our recommendations. It is not too difficult on any needed project to show why the money should be spent if the engineer's analysis can show by the necessary facts and figures its importance to the community. In quite a few instances our projects fail because many engineers become more concerned with the gathering of facts rather than with selling themselves and their projects to the public.

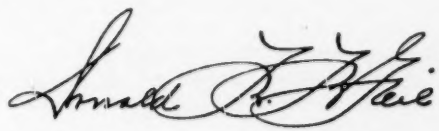
During the previous decade, many studies were made of the parking problem in Pittsburgh's Central Business District. Many summaries and analyses disclosing various facts were made and it is very questionable whether any pertinent information regarding our parking problem was unknown, yet the solution to this matter remained dormant. It was not until many years later that a citizen's organization assigned their promotion and publicity staff to the task of dramatizing this data in an effective manner so that laymen and merchants would have a complete understanding of the parking problem. Shortly thereafter, a united effort on the part of the citizens and businessmen resulted in real progress being made on the solution of the parking problem.

As we reminisce the steps that have been taken in the past years, one can clearly see that had we engineers not become so absorbed in obtaining more and more factual information, but rather, after having the necessary basic data, devoted more time in acquainting the public with this information and the need for the solution to this problem, more progress would have been gained.

Perhaps this example is a little too extreme, yet frankly speaking, I believe many basically sound engineering projects which would work for the good of the people bog down at this same point because of the lack of publicity and promotion.

Engineers are thinkers. They are supposedly men with well-trained minds. At times we fail to see that public approval and support must be gained for our projects if our programs are to reach the point of completion.

Good advice to a traffic engineer might be "Stop hiding your light under a bushel" . . . and "let that light so shine before men that they may know your good works."



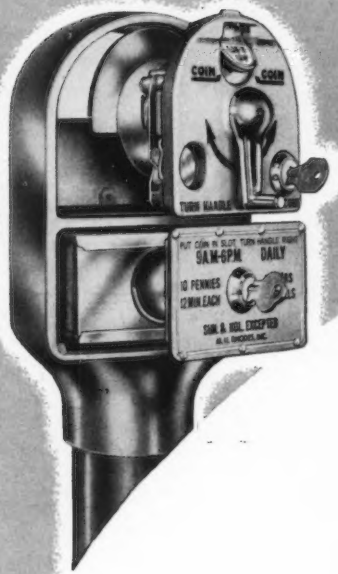
Director

mark-time manual parking meters

give

traffic control

plus . . .



quality construction

for longer life

quality performance

for increased revenue

Check **these Mark-Time PLUS FEATURES!**

- *Magic Safety Link protection guards against damage by carelessness or vandalism.*
- *Safety-protection against snow, sleet, dirt, dust and other weather hazards.*
- *Locked coin-box preventing revenue theft. The only proven method of safe, reliable, coin collection.*
- *Completely water-proof timing unit assuring continuous meter operation.*
- *Extra-visibility timing dials greatly simplifying enforcement problem.*
- *Manual operation means greater simplicity of design and assures fool-proof, foul-proof performance.*

Your city will keep on the PLUS side with a Mark-Time Manual "Hurricane" Parking Meter installation. Mark-Time Manual parking meters are designed to give continuous, dependable service free from costly maintenance . . . ready at all times in all weather to render efficient, uninterrupted traffic control.

MARK-TIME

M. H. RHODES, INC.

HARTFORD, CONNECTICUT

Manufactured and sold in Canada by
Ontario Hughes Owens Co. Ltd., of Ottawa, Ontario

Traffic Engineering Becomes of Age in Kansas City

By Thomas J. Seburn (Mem., ITE)
City Traffic Engineer, Kansas City, Missouri

This is the second in a series of articles to be published in "Traffic Engineering" magazine. Articles of a similar nature, written by traffic engineers of cities of various sizes in several parts of the country, will appear in future issues of "Traffic Engineering." The population of Kansas City, Missouri, is 399,178.

IN 1933, the first full year of the Traffic Engineering Division, 101 persons were killed in traffic accidents on the streets of Kansas City. With approximately a one hundred per cent increase in traffic volume over 1931, a total of 37 persons lost their lives to the traffic juggernaut in 1950. Certainly, these 37 lives should have been saved but it is felt that in view of the increase in exposure, some improvements had been made to keep the figure from being 200 or more. In viewing the picture from the standpoint of increased facilitation of traffic movement, we find that, with a doubled traffic volume over the 20-year period, the running time from the center of our business area to the more remote points at our corporate limits increased from 20 to 30 per cent. These figures do not leave anything to be completely self-satisfied about but it can easily be recognized that the situation could be much worse if remedial steps had not been taken. They take on added significance when it is realized that the first modern freeway in our City was open to traffic on November 16 of last year and that, until that time, all increased traffic loads were borne on an outmoded street system. Also, we must hasten to point out that many others played a very important part in any improvements that might have been made over this period.

Traffic Engineering Division Created

The Traffic Engineering Division was created by ordinance of the City Council in December, 1930 following a city-wide traffic survey which had covered a period of approximately a year under the sponsorship of the Chamber of Commerce of the City. One of the recommendations made in a report on this survey was that Traffic Engineering be given the proper place in the governmental structure.

This Division had a small beginning. At first, the staff consisted of the Traffic Engineer and one clerk whose responsibility it was to obtain various types of traffic data, maintain accident records, and similar duties. All other aid was provided by existing City departments such as the City Engineer's office for drafting personnel and the Street Repair Division for laborers for the installation of traffic control signs and markings. This arrangement continued until in 1940, the Division was properly established with its own budget and detailed responsibilities set up under the Administrative Code of the City, listing it as one of the seven operating divisions in the Public Works Department. The Organization Chart of the Division (Fig. 1) will show the position held by the Traffic Engineering Division being under the Director of Public Works who, in turn, is directly responsible to the City Manager. Study of this organization chart will show that present budgeted personnel is 48 persons of which 26 are engineering and clerical personnel, 19 are involved in the installation and maintenance of traffic signs and markings exclusive of signals, and three are assigned to the responsibility of parking meter maintenance. As will be pointed out later, much of this increase in personnel has been brought about by additional duties and responsibilities placed upon the Division as new problems arose.

Annual Budget

The budget for the fiscal year 1951-52 totals $1,080,141.00. Of this total figure $904,500.00 is in Contractual Services, primarily devoted to the costs of operating and maintaining traffic signals and street lighting under a contract with the Kansas City Power and Light Company. A total of $135,484.00 is Personal Services, the balance being for various commodities and minor capital expenditures, such as office equipment.

Traffic Engineering Activities

According to the Administrative Code, the Traffic Engineering Division is responsible for all studies of conditions affecting the safe and convenient use of our streets and boulevards and, in some cases, making recommendations for improvements while in others responsibility for the improvements rests directly upon the Division.

In reviewing the history of the Traffic Engineering Division, the last 10 years have probably been far the more significant. The Division very gradually grew in size and importance during the 10-year period 1931 through 1940. Traffic increases were slow and the problems developed so gradually that it was rather difficult to gain the approval of traffic engineering proposals. Many of the citizens did not realize what traffic delays were costing them. With war-time restrictions imposed upon motor vehicle travel, traffic volumes were reduced during the period of World War II until, at the low point in 1944 and 1945, traffic movement on our streets was very comparable to that at the time the Traffic Engineering Division was first established. The conclusion of hostilities resulted in a 60 per cent increase in over-all volumes over that immediately prior to the war and almost a 100 per cent increase over the low point in 1944 and 1945. Many routes have shown increases of 150 to 200 per cent and such sudden and dramatic changes brought about a new consciousness of the traffic problem.

It was necessary for the Division to move on many

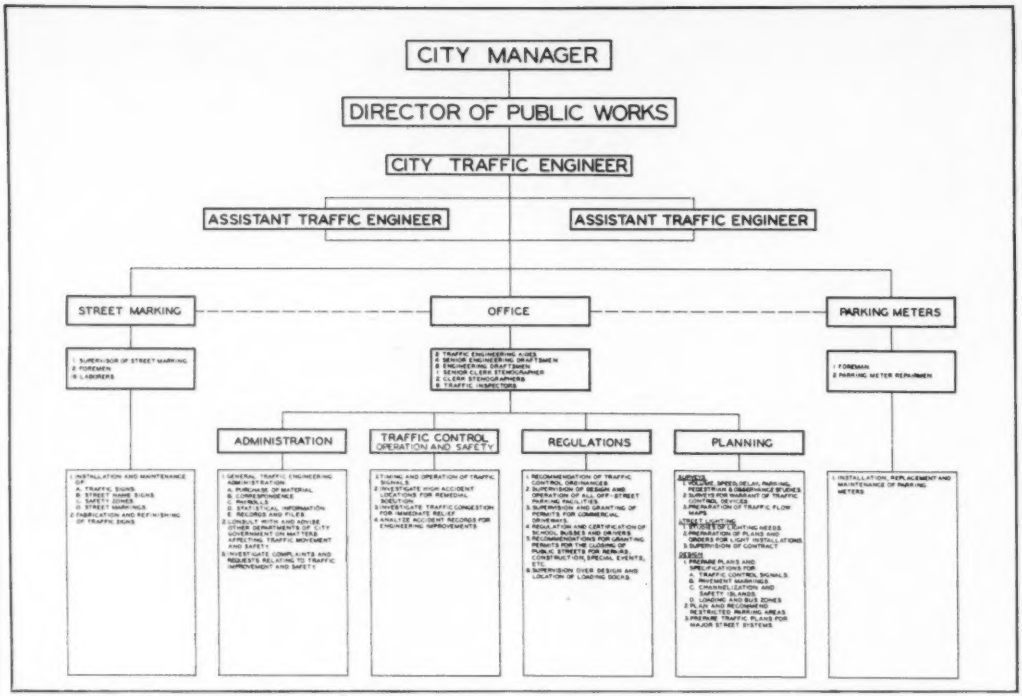

CITY MANAGER
DIRECTOR OF PUBLIC WORKS
CITY TRAFFIC ENGINEER
ASSISTANT TRAFFIC ENGINEER
ASSISTANT TRAFFIC ENGINEER
STREET MARKING
OFFICE
PARKING METERS
1 SUPERVISOR OF STREET MARKING
2 FOREMEN
9 LABORERS
2 TRAFFIC ENGINEERING AIDES
2 SENIOR ENGINEERING DRAFTSMEN
1 JUNIOR ENGINEERING DRAFTSMAN
1 SENIOR CLERK STENOGRAPHER
2 CLERK STENOGRAPHERS
9 TRAFFIC INSPECTORS
1 FOREMAN
2 PARKING METER REPAIRMEN
ADMINISTRATION
TRAFFIC CONTROL OPERATION AND SAFETY
REGULATIONS
PLANNING
1 INSTALLATION AND MAINTENANCE OF
A. TRAFFIC SIGNS
B. STREET NAME SIGNS
C. SAFETY ZONES
D. STREET MARKINGS
2 FABRICATION AND REFINISHING OF TRAFFIC SIGNS
1 GENERAL TRAFFIC ENGINEERING ADMINISTRATION
A. PURCHASE OF MATERIAL
B. CORRESPONDENCE
C. PAYROLLS
D. STATISTICAL INFORMATION
E. RECORDS AND FILES
2 CONSULT WITH AND ADVISE OTHER DEPARTMENTS OF CITY GOVERNMENT ON MATTERS AFFECTING TRAFFIC MOVEMENT AND SAFETY
3 INVESTIGATE COMPLAINTS AND REQUESTS RELATING TO TRAFFIC IMPROVEMENT AND SAFETY
1 TIMING AND OPERATION OF TRAFFIC SIGNALS
2 INVESTIGATE HIGH ACCIDENT LOCATIONS FOR REMEDIAL SOLUTION
3 INVESTIGATE TRAFFIC CONGESTION FOR IMMEDIATE RELIEF
4 ANALYZE ACCIDENT RECORDS FOR ENGINEERING IMPROVEMENTS
1 RECOMMENDATION OF TRAFFIC CONTROL ORDINANCES
2 SUPERVISION OF DESIGN AND OPERATION OF ALL OFF-STREET PARKING FACILITIES
3 SUPERVISION AND GRANTING OF PERMITS FOR COMMERCIAL DRIVEWAYS
4 SUPERVISION AND CERTIFICATION OF SCHOOL BUSES AND DRIVERS
5 RECOMMENDATIONS FOR GRANTING PERMITS FOR THE CLOSING OF PUBLIC STREETS FOR NON-RR CONSTRUCTION, SPECIAL EVENTS, ETC.
6 SUPERVISION OVER DESIGN AND LOCATION OF LOADING DOCKS
1 INSTALLATION, REPLACEMENT AND MAINTENANCE OF PARKING METERS

Fig. 1
Organization chart of Traffic Engineering Division.

fronts. These, of course, had to be based upon factual data in order to determine just what was needed and in order to substantiate requests for various changes. Our small staff of traffic inspectors who are responsible for the obtaining of traffic counts were put to work making various types of traffic studies. These were augmented in the summer of 1946 by almost 1,000 Boy Scouts who contributed their time towards making a cordon count of our Central Business Area in which data on curb parking and off-street parking were also included. Our regular maintenance of accident records was also a very vital part of the studies. Other special checks included origin and destination information that had been obtained with the cooperation of the Missouri State Highway Department and the Federal Bureau of Public Roads during 1944 together with additional parking studies and time zone runs. In addition to our own use, much of this information is furnished to other divisions such as the Engineering Division who uses traffic data as one of the primary factors in determining the priority for a major street resurfacing program which has been carried on through the past few years. This program amounted to over $1,000,000.00 in 1950 and it is estimated that it will exceed this figure again in 1951. As a result of the studies made in 1946, several very important improvements have been made. Among these is the development of a system of one-way streets in our Central Business Area.

One-Way Streets

One-way operation had first been proposed by the Traffic Engineering Division in 1939 and had been met with a strong protest, to put it mildly. The study and report in 1946 again brought up the question of one-way streets and, after almost a year of debate, a system was finally put into effect following a very helpful stand by the Downtown Committee of our Chamber of Commerce. The one-way operation which had been so unpopular when first proposed was given a few months trial period after which a direct mail questionnaire was sent by the Downtown Committee to all property owners and merchants on the streets affected. The tabulation of this inquiry showed that these same people were now more than 7 to 1 in favor of the one-way plan. In September, 1949, an additional study was presented to our City Council dealing with an additional pairing of two streets to form approximately 11 miles of improved traffic routings from one of our heaviest population concentrations to the immediate vicinity of our Central Business Area. It is felt that this particular program was somewhat unique in that it called for the expenditure of over $100,000.00 plus the designation of priority for street resurfacing work to make these two streets serve their purpose as one-way arteries. After careful study, the Council accepted this proposal and by resolution instructed the various departments affected to prepare the necessary plans to develop these two routes in the construction season of 1950 and place them in operation as one-way arteries. This was done and the one-way plan put into effect in August, 1950 at which time the results were immediately gratifying. At a relatively small cost, these two streets which had potential value not being realized were made to serve over 21,000 vehicles daily. We now have over 30 miles of one-way routes and additional arteries are being planned.

Parking Controls

Another step recommended in the 1946 report was the more widespread and stricter use of the rush-hour prohibition of parking in order to clear major traffic routes. This had been in partial effect for several years in our Central Business Area although the legal requirements as formerly imposed did not lend themselves to good enforcement of this regulation. Finally, late in 1946, the principle was adopted in the Central Business Area covering the period from 7:00 A.M. to 9:00 A.M. and from 4:00 P.M. to 6:00 P.M. and providing that vehicles could not stand at the curbs during these periods. Subsequently, an ordinance providing authority for the Police to tow vehicles off the streets if they are found parked during these hours has been put into effect.

Efforts to extend the rush-hour prohibition of parking on the major tributary routes met with much disfavor and it was only after many months of continuous debate that this principle was finally determined in 1948 on the major outlying routes. It is now rather well accepted and we have approximately 30 miles of routes marked with this prohibition. Similarity of this figure with that cited with regard to one-way streets is only coincidental as they are not the same.

New Regulations

For years all traffic regulations were required to be submitted for action by the City Council prior to any such regulation being put into effect. In the past few years, a procedure has been developed and held to be proper by our Legal Department which places a much greater degree of this responsibility upon the Division. The Traffic Engineer, acting through the Director of Public Works, issues regulations pertaining to such as curb parking prohibitions and the installation of various types of traffic control. These are then filed with the City Clerk's office, each regulation being identified serially by number. Regulations are printed once in an official newspaper doing the City printing and five days, thereafter, become effective. They remain in effect for a period not to exceed 60 days and, in the meantime, an ordinance is prepared and submitted to the City Council for approval of these regulations by reference only, the reference being to the serial numbers. In many cases, these are passed automatically by the Council and become a part of the permanent traffic ordinance. In a very few cases objections have been raised by citizens and these are then the subject of formal hearings by a Council Committee and final determination as to the propriety of the regulation is made by the City Council. Without boasting, it can be stated that, in very few cases, has the recommendation of the Division been overruled.

Signs and Markings

Following the issuance of a regulation, the Division is responsible for the installation and maintenance of all signs and markings dealing with traffic control. This includes street name signs as well as those normally considered to be traffic control signs.

We have a total of over 21,900 parking and other traffic control signs and a total of 13,300 street signs in use for which the Division is responsible. All processing of new signs and refinishing of damaged signs is carried on in the Sign Shop of the Division.

Signals and Street Lighting

All traffic signals and street lights are owned and operated by the Kansas City Power and Light Company on a contractual arrangement for the City. This arrangement provides for the Company to bear the cost of capital investment and all maintenance, operating, and power charges, these being reflected in the annual rates for each type of equipment used. It is the responsibility of the Traffic Engineering Division to administer this contract, placing the necessary orders for traffic signals and street lights, supervising the timing of the signal system, and checking the performance of the Company under all phases of the two contracts.

Design and Planning

The Traffic Engineering Division is called upon to consult with the City Engineer in the detailed planning of

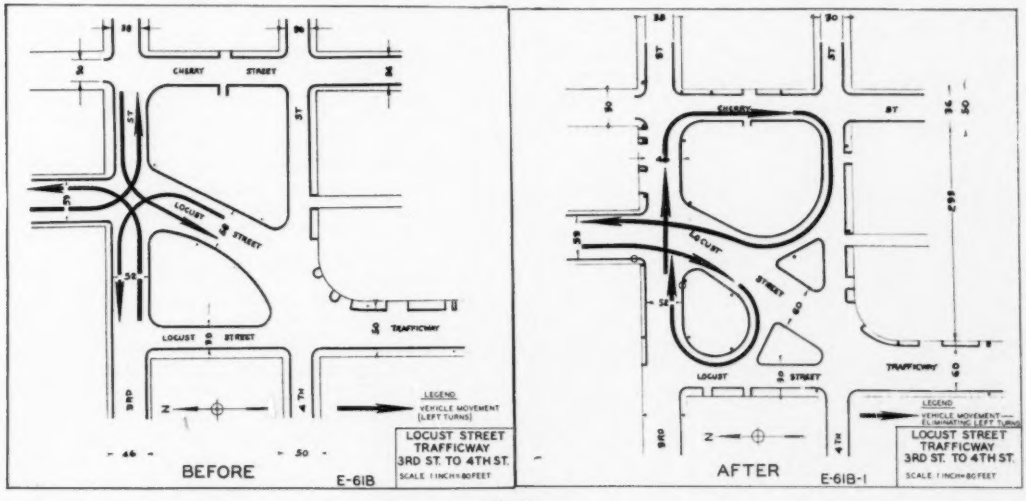


Fig. 2
Before and After plan of clover-leaf at grade.

major street improvements and to consult with the City Planning Department on the planning operation. Recommendation of the Traffic Engineer is required by ordinance for the Board of Zoning Adjustment in considering requests for zoning changes in the land use pattern.

Another front on which the Traffic Engineering Division moved was with regard to the breaking of bottlenecks at particularly critical locations. These have been many and varied but a few typical examples will be cited. There is now one major bridge crossing the Missouri River to a rapidly growing industrial and residential center, the southern terminus of this bridge being only a short distance from our Central Business District. The intersection of our Third Street with the Bridge Approach created serious difficulty because of heavy left turning movements. Two of these turns could be easily prohibited, but the other two were vital to the circulation pattern of our street system. By using available park land and existing streets, a clover-leaf at grade was provided for the two important left turns, thus greatly increasing the capacity. The plan of this location, before and after the improvement, is shown on Fig. 2.

Another location given special treatment is a five-point intersection at the edge of one of our most important outlying business centers. By its design, this intersection was practically forcing all through traffic into this congested shopping area, while a nearby boulevard was not being used to capacity. A relocation of a scenic island to permit ready by-pass of through traffic resulted in saving delays to the through drivers and at the same time taking them out of the competition for limited street space in the business center. This location, for those familiar with Kansas City, is 47th Street and J. C. Nichols Parkway, the gateway to our Country Club Plaza shopping district.

Taking another cue from river engineers who change the course of a stream when necessary, a troublesome intersection was treated by diverting the traffic flow from one of the entering roadways to another. This was done by building a dam in the form of a traffic island across the throat of one street and posting of advance warning signs rerouting the through traffic.

Studies made by the Traffic Engineering Division resulted in improvements such as the foregoing examples and also many minor roadway widenings where bottleneck conditions could be relieved by balancing the capacity and demand on existing streets. Actual construction work is done by the Park Department if the project involves boulevards, or by the City Engineer if it is on streets, but in many cases the primary studies for the project originate with the Traffic Engineer.

Pedestrian Safety

At the time of the Traffic Survey in 1929 and 1930, a special study was made of the problem of the safety of persons boarding and alighting from street cars and the proper design of loading platforms to provide the maximum safety for patrons of the transit units while also providing the minimum hazard to approaching motor vehicles. A raised platform type of zone was developed and the first of these was installed in Kansas City in 1931. Some of them are still in use in the present form and many have been added since that time.

Fig. 3 shows a section of a new modern traffic artery opened in 1950. It will be noted from this view that a continuous medial divider with breaks only at important

Fig. 3
Section of a new artery.

cross arteries is to be found. The use of medial dividers for major highways in order to eliminate head-on collisions has long been recognized. However, in urban areas, the more significant need for divided roadways is found in the hazard to pedestrians who must cross heavy traffic streams on wide arteries. The installation of traffic signals at sufficient points to meet the needs of all pedestrians is not desirable, both from the standpoint of cost and from the standpoint of too frequent interruption of the traffic flow. It has been found that pedestrians can, with a reasonable degree of safety, cross a one-way traffic street and the medial divider providing a haven of safety results in two adjacent one-way roadways for safer crossing by pedestrians.

Separate signal intervals for pedestrians are used at heavy shopping intersections. Insofar as we know, Kansas City was the first to adopt this principle although it is recognized that others may have used this or something similar at particular locations. Eleventh Street in Downtown Kansas City is called Petticoat Lane because it is in the heart of the heaviest shopping area. In 1948 when 11th Street was made one-way, a problem was found at the intersection of 11th and Main Streets where an offset of approximately 110 feet in 11th Street resulted in turning movements for all motor vehicle units. These turns, whether they be right or left turns had to compete with extremely heavy pedestrian loads and frequently not more than one motor vehicle could pass through the intersection on the green phase of the signal cycle. By shortening the vehicle amber periods and borrowing a few seconds of the two vehicle flow periods, sufficient time was obtained within a 50 second cycle to provide for an exclusive pedestrian interval during which time all motor vehicle travel is stopped and pedestrians are permitted to cross in any direction at any point within the confines of the intersection. After installing this on a trial basis, it proved so successful that it has been added at two other locations. It should be pointed out that we recognize this plan has very definite limitations. First, it is not justified unless pedestrian loads

are extremely heavy and turning movements are in major competition with walkers. Second, it has been our experience that it is very questionable whether it can be used on streets with wide roadways. Its use in connection with one-way streets on roadways not to exceed 45 or 50 feet in width where important turning movements are in conflict with important pedestrian movements has been proven in our estimation and at least one additional location in our Central Business Area will have this type of operation within the next few weeks.

Street Lighting Modernization Program

One important duty that was added to the Traffic Engineering Division in the past few years has been the responsibility for street lighting. The Traffic Engineer had, for a number of years, pointed out the seriousness of the night accident hazard and the benefits that could be obtained from improved lighting. Finally, in December, 1944, by order of the Director of Public Works, the Division accepted responsibility for the street lighting program with the understanding that a complete modernization program for the street lighting system within the City would be planned and executed. During 1945 it was impossible to obtain equipment and the time was spent in planning improved lighting and finally, with the delivery of materials in 1946, the program moved into the construction stage. The plan called for the complete relighting of the entire City in two major classifications—1. Heavy traffic arteries were to be relighted with intensities developed by the Institute of Traffic Engineers and the Illuminating Engineering Society to meet the needs of nighttime traffic safety; 2. All residential streets were to be relighted with modern equipment as a deterrent to molestations, holdup, and similar crimes.

The plan called for the replacement of 13,500 lights, including more than 1,300 gas lights. Whereas most of the existing lights were only 250 candlepower, the new ones would range from 400 up to 1,500 candlepower. The existing 11½ million lumens of effective light on the city's streets, costing $552,000.00 a year, would be replaced by 49 million lumens at a cost of $626,000.00 a year. This meant a reduction in operating cost from $47.53 per 1,000 lumens to $12.80. The relighting program was carried out by the Kansas City Power and Light Company, which holds the contract for lighting the city's streets, and benefits of the effort were realized from the start. On some relighted streets, the ratio of nighttime traffic deaths to those occurring in daylight, formerly 9 to 1, was reduced to 1.33 to 1. By May 1, 1951 a total of 11,798 new type lights had been placed. On major routes 182.8 miles had been relighted with 8,912 lights, representing about 90 per cent of that phase of the program. On residential streets, 170.9 miles had been completed with 2,886 lights, representing about 20 per cent of that work. Fig. 4 shows one of the streets improved in the city-wide relighting program.

One type of hazardous location where the tall new standards were unavailing was the series of underpasses formed by Kansas City Terminal Railroad viaducts across the City. At that time no commercial fixtures were available for this purpose and one was designed by engineers of the Division. Early in 1949, the first installation of fluorescent lamps was made at one of these underpasses as a test of the design, and ten others have been similarly treated since, creating a safe, well-lit traffic passageway.

Another significant advance in the City's street lighting came in January, 1949 with the installation of a photoelectric cell automatic control system developed by the Kansas City Power and Light Company at the request of the Traffic Engineering Division. Turning the street lights on and off according to natural light intensities, the new device provided greater efficiency and economy than the former method of astronomic time clocks. It is even more dramatically compared to the old-time lamplighter.

Off-Street Parking

Another study carried on by the Traffic Engineering Division dealt with the off-street parking problem. Unfortunately, we are unable to report major progress in this activity primarily due to the fact that legal and financial barricades have been in the path of Missouri cities. One of these difficulties has been eliminated by a recent Supreme Court decision which has clarified the issue insofar as the responsibility and right of Missouri cities to engage in off-street parking activities as public projects. There is still a question of financing in which a Supreme Court decision is necessary to make it possible for the City to issue revenue bonds for the acquisition and development of off-street parking stations. In the meantime, preliminary plans have been prepared by the Traffic Engineering Division although it is recognized that considerable detail will need to be reviewed prior to any actual acquisition of such parking facilities.

In connection with the study of off-street parking, our attention was drawn to physical and operating conditions of privately-owned facilities which resulted in these facilities not being used to the best capacity and also resulted in unnecessary congestion and hazard on the streets. These conditions were brought to the attention of our City Council and after some consideration, an ordinance was passed requiring that the Commissioner of Licenses shall not issue a license for any parking station until the applicant presented to him a written authorization from the Traffic Engineer. Certain construction requirements were included in the ordinance as a basis for inspection and approval by the Traffic Engineer. These construction requirements include adequate surfacing, limitations on location and size of driveways, and further that the parking station should be fenced or protected by an attractive wall or handrail to limit points of ingress and egress to the regularly established driveways. We are further charged to determine if the maximum car

(Continued on page 346)

Anderson Photograph Company

Fig. 4

One of the relighted streets in the city-wide modernization program.

Tests of Highway Signs for United Nations

By Charles R. Waters (Mem., ITE)
District Engineer
and
Gilbert W. Treble (Assoc. Mem., ITE)
District Traffic Engineer
New York State Department of Public Works, Buffalo, N. Y.

SOME time ago the United Nations appointed a committee of engineering experts on road signs and signals to study the advisability and feasibility of standardizing highway signs on a world-wide basis. To do this, it was decided to have sets of signs fabricated by one manufacturer in the United States and then distribute similar sets to different United Nations Members for testing.

Each set consisted of 24 signs. The basic signs tested were Curve, Intersection, Railroad Crossing, and Narrow Pavement. The standards used were United States, European and Central and South African, each with a set of variations of those standards as shown in Fig. 1, "United Nations Test Signs."

In general, the tests consisted of having individuals in separate cars, each accompanied by a driver and a recorder, ride along the road at specified speeds and give readings as to the distance when the shape and message of the various signs could be comprehended.

Origin of Sign Standards

The origin of the United States and International standards of highway signing was in the middle twenties, the United States standard having been adopted by the American Association of State Highway Officials in 1925. The League of Nations through the International Convention of Road Traffic adopted the International standard the following year. The United States did not approve the International standard which was unified in 1931 at Geneva. The United States standard has been widely used throughout most of the Americas, while the International standard has been employed by nearly every other nation in the world. The two systems are by far the most predominant throughout the world today, although variations of the two are quite extensively used.

The Highway Transport Committee of the International Chamber of Commerce submitted a resolution relating to the world-wide standardization of signs at Paris in December 1946. This was to be done by providing standard colors and dimensions for all highway signs, since the Committee felt this was the only really effective method by which highway signs would make the greatest contribution to safety on the roads.

The next major step was taken by the United Nations at Geneva in the summer of 1949, when they set up a world-wide conference on Road and Motor Transport. Experts from sixty-eight countries were invited to the conference to take part in attempts to draw up a new set of rules and regulations for highway signs. Discussions were held relative to the possible standardization of traffic signs throughout the entire world. Although the conference was unable to agree on a single standard acceptable to all countries, it reached somewhat of a compromise. The action

Fig. 1

taken was the adoption of a proposed "International" system which was based generally on current European standards. A recommendation was made that a special United Nations committee be named for further study in an attempt to adjust differences between the United States and the International standards. It was hoped that a standard might be developed to which all nations would agree.

Differences in Standards

One of the main differences between the two standards is that the United States employs both symbols and lettering on its signs, while the International standard uses only symbols on nearly all of its highway signs. The latter method has the advantage of ruling out language barriers, although the general feeling in the United States has been that signs with word messages are often necessary. Another difference is found in the color schemes used. The individual signs of the United States never require more than two colors, including the color of the background. On the other hand, the International standard employs a rather complicated color scheme which enables them to use symbols almost entirely. Colors used for the three major categories of danger, regulatory and informative signs are variable.

Another basic difference in the standards has to do with the shapes of the signs for various categories. The United States uses diamond-shaped signs for warning and cautionary signs, except that round signs are used for railroad crossings; octagonal-shaped for Stop signs, and square or rectangular for information or regulatory purposes. In the International system triangular shapes are used for danger signs; round signs are used for instruction purposes, and square or rectangular shapes for informative and directional signs. In the current tests not all of these types were used—simply those shown in the illustration.

The overall size of the signs does not show great differences, although there are exceptions. The placement of signs in relation to the pavement height and offset does not vary much between the two standards. However, the placing in relation to existing dangers such as cross-roads and railroads, differs in some cases. The International standard permits Stop signs for intersecting roads to be placed as far as 164 feet from the intersection, while the United States specifies a maximum of 50 feet. The United States standard calls for erection of warning signs from 300 to 500 feet in advance of a hazard, while the International specifies 492 to 820 feet for its danger signs. In the matter of reflectorization of signs, the United States standard requires illumination or reflectorization of all warning signs, most regulatory signs and informative signs, while the International standard allows reflectorizing only in case no dazzle or obscuring of the legibility occurs. (See discussions on "The International Sign System," September and November 1947 issues of Traffic Engineering.)

With this historical background of the differences in the standards, we will describe the test conducted recently by the New York State Department of Public Works.

New York Test

For the test, twenty-four signs were used—four representing the European standard; four the European standard with variations; four the American standard; four the American standard with variations; four the Central and South African standard, and four the Central and South African standard with variations. The Central and South African signs are similar to the European, in that both employ the use of symbols. However, in place of the triangle they utilize a triangular target mounted above a rectangle. All of the signs tested were reflectorized with reflective sheeting.

Fig. 2

The signs tested in New York State were erected on April 5, 1951, along Touring Route U. S. 20 which parallels the shore of Lake Erie in Southern Erie County. A section of highway about eight miles in length was used for the test section. This length enabled the signs to be spaced so that no two signs were in view at any one time. In order not to confuse the traveling public, a warning sign was erected at each end of the test section. (See Fig. 2). To further eliminate confusion, the signs with railroad designations were covered when the test runs were not being conducted. This insured against the possibility of buses stopping for such signs.

Method of Test

The twenty-four signs to be tested were divided, and twelve were placed on each side of the road. Therefore a complete test run consisted of traveling south over the section, turning around and proceeding north to the point of beginning. Since the section selected was on a fairly straight horizontal alignment with only slight relief, it was possible to secure long sight distances. In placing the signs, every attempt was made to insure sight distances one-half mile or more in length. A random order of signs was used so that no conclusions could be drawn before the signs were actually sighted. For example, the International standard railroad sign was used, followed by the United States standard curve or cross-road sign, and then the Central and South African narrow road sign.

During the progress of the tests the signs were transposed on the posts. Two arrangements of signing were employed in order that no sign would be given preference or be slighted in the rating. This was necessary due to the unfamiliarity of the observers with the International railroad and other signs. To simplify changes, the signs on the west were changed with the ones on the east side of the road. This procedure resulted in an exactly reversed order; thus sign 1 in the first arrangement became 24 in the second arrangement; sign 5 became 20; sign 12 became 13, etc. Half of the readings for each condition were obtained with one arrangement and the other half with the second arrange-

Fig. 3

ment. This balanced the reading and gave average results.

Fourteen 100-foot intervals in advance of each sign were marked with a stake with an appropriate number in order that the recorder could quickly establish the distance away from the sign at which the observer first recognized the true shape, and later on the distance at which the sign was readable. The nearer intervals were also marked with an intermediate 50-foot stake.

For the test, three cars were used in order that three observers, one in each car, could be taken over the test run at one time. The drivers were required to maintain an average speed of 50 miles per hour during the day, and 40 miles per hour at night. The observer sat in front beside the driver and called off the shape of the sign when it was recognizable. If the right shape was called off, the recorder sitting in the rear seat noted the distance on a form prepared for this test. In case of a mistake, he waited until the correct shape was given before recording the distance. The same procedure was used for the instant the observer could name the message given by the sign.

During the three week period beginning April 9th, 142 test runs were conducted during varying conditions of cloudy, rainy, and clear weather in the daytime, and cloudy and rainy weather in the evening after dark. The observers were selected as those representing a fair cross-section of drivers. Among them were mechanics, painters, welders, stenographers, housewives, bookkeepers, clerks, school teachers, truck drivers and engineers. All were selected at random so some wore glasses and others did not, and the age spread of the group was from 21 to 60 years.

Some Outstanding Results

Some observations were made regarding the various signs, but at this time it seems best not to draw any conclusions. Three other States conducted tests on the same set of twenty-four signs, and similar tests on similar signs are being run in foreign countries. It can, however, without divulging the final results, be stated that the European and African signs for railroad crossings were often mistaken for a curve sign because of the smoke trailing from the stack of the locomotive. (See Fig. 3). The locomotive is black on a white background surrounded by a red border. On the other hand, the round shape of the United States railroad marker was not readily noted at a distance and frequently was described as square rather than round. The double R's on the round railroad sign were not legible at long distances, and thus in a number of instances the cross was described as being an International cross-road sign.

The United States "Narrow Road" in four-inch letters was not easily readable or recognized as quickly as the European or South African symbols for narrow roads. However, the United States curve signs with their heavy arrows on a 2′x2′ diamond shape were recognized more quickly than the equivalent sign used by either the European or the South African countries.

It is expected that in the near future the Committee of the United Nations will release a report showing the results of all of these tests. There is considerable work ahead if the United Nations is to gain uniform standards of signing highways, but it would appear that a good start has been made toward rating the merits of the two standards.

R. C. TRAFICOUNTER

Built to count 900 or more cars per minute. Traffic counted and recorded every 15 minutes as well as every hour. Automatically resets to zero.

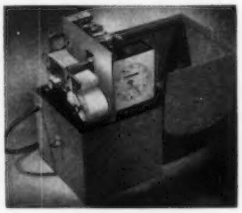
•

Precision built

•

highway tested

•



Surpasses U. S. Government specifications. Easy to carry—easy to install—easy to operate. Housed in a dust-, dirt- and waterproof container.

Write for latest circular

STREETER-AMET COMPANY

1726 BELLE PLAINE AVENUE :: CHICAGO, ILLINOIS

Chicago's Mobile Traffic Survey Unit

By Theodore M. Vanderstempel (Mem., ITE)
Traffic Engineer, Bureau of Street Traffic, Chicago, Illinois

ONE phase of the recent expansion of the Bureau of Street Traffic of the City of Chicago has been the development of a new field survey group, for the purpose of making traffic volume counts, observation studies, parking surveys and other field investigations required by the Bureau. This group operates under the Statistical Section of the Engineering Division of the Bureau, and consists of eight men, including two crew chiefs. Transportation of personnel and equipment presented a problem which was met by the acquisition of a special Mobile Surety Unit vehicle.

After considerable investigation, a station wagon type of vehicle, known as a "Carry-All," was selected, and modifications made in the interior to suit the purposes for which it is used. The vehicle is equipped with two spot lights, and an emergency flashing red light on top, similar to that installed on police vehicles in Chicago (Fig. 1). Markings on the rear and side identify the vehicle as "Mobile Survey Unit No. 1, Bureau of Street Traffic, City of Chicago."

The Carry-All came equipped with three rows of seats: a full width rear seat, a three-quarter center seat, and a full width front seat with a tilting right section. The center seat was removed and the full width rear seat mounted in its place, thus affording a carrying capacity of five to six persons and considerable additional storage space in the rear for equipment. Full doors in the back of the vehicle furnish access to the rear storage area.

A rack was constructed in this storage area to furnish a separate space for each of twenty small non-recording traffic counting machines, with an additional row of compartments available for small parts. This rack is located immediately behind the present full width seat. Two wooden spools are mounted at the rear, one on each side, each carrying twelve 50-foot lengths of tubing. Two large recording traffic counting machines are placed between the spools and the rack, one on each side (Fig. 2).

Fig. 1 *Peter Fish Studios*

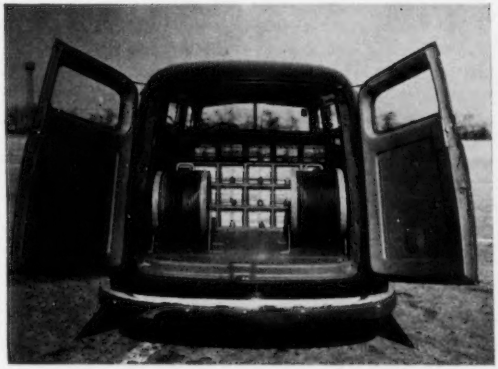


Fig. 2 *Peter Fish Studios*

On top of the rack, compartments are available for tools, such as tube clamps, screws, nails, etc., necessary for installation of the counting machines. Also on top of the rack is a locked steel cabinet for special equipment such as electrical red flashers, spare batteries, flashlights, etc. A special box mounted along the side of the rear seat provides storage space for chains required to secure the machines when in position on the streets.

When studies including turning movements and pedestrians are required, such information cannot be obtained by machine and it becomes necessary to use hand counters. For this purpose twenty hand counters are provided in a chest located between the two drums to the rear of the rack. These counters are nine-bank, enabling a single checker to conveniently count nine breakdowns. The instruments are mounted on clip boards to facilitate transfer of figures from the counter to a field sheet at periodic intervals.

The vehicle is also equipped with a graphic speed recorder actuated from the transmission by means of a dual take-off or adapter at the same location as the regular speedometer cable. Both the regular speedometer and the recorder have been calibrated to indicate exact speed in miles per hour. The recorder registers the time and speed on a graph by means of two stylii, thus making it possible to ascertain speed at any time. The duration of delays can be determined simultaneously and the cause noted. This data can be supplemented by observers within the vehicle for complete speed and delay studies.

Although this unit has been in operation only a short time, it has already proved invaluable to the efficient operation of the field forces. At the present time, thought is being given to the acquisition of a second Unit to better cover the demands of the expanded operations of the Bureau.

Traffic Engineering in Civil Defense

By B. A. Lefeve

Director, Bureau of Highway Planning and
Chairman, Public Works Civil Defense Committee,
New York State Department of Public Works

UNDOUBTEDLY one of the big questions in everyone's mind today concerns the Atom Bomb. "Will we in the United States be subjected to atomic bombing?" What will happen and what will we do if we are bombed? The amount of consideration and thought given to these questions by the average person seems to fluctuate with the progress and the status of the war in Korea. It is generally recognized that there is a definite apathy or inertia on the part of the people of the United States toward the effective activation of a Civil Defense Program.

A little serious thought on the matter of Civil Defense will reveal that we either need a vigorous Civil Defense program and organization or we definitely do not need any at all. There is no half-way course. There is no such thing as a little bit of bombing. If the United States is bombed it will be bombed with vengeance and no halfway or half-hearted Civil Defense plan or organization will be able to cope with such a disaster. Since the judgment of the best informed in this country is that such a bombing is entirely possible at the present time and at almost any future time, it seems that it is not only practical but sensible to make every effort to be ready for such an eventuality. The people of this country are great believers in insurance of all kinds. Civil Defense is insurance in every sense of the word and, like good insurance, it must be basically sound and properly administered.

The Civil Defense planner and the public official charged with the responsibility of proper and necessary action in the event of atomic bombing must find the answer to that haunting question: "What will happen and what will we do if we are actually bombed?"

Both the problem and the answer are complex. It is necessary to consider the various phases; establish policies and procedures to cope with each individual phase; and then to coordinate all of the activities into a smoothly running organizational plan. Probably one of the most important of all is the problem of traffic control, not only in the stricken area itself but in all of the approaches to that area. If adequate and timely traffic control measures are not taken, the entire plan of mutual aid and assistance will bog down in a maze of clogged streets and highways.

Types of Traffic to be Considered

There are four general types of traffic that must be considered:

1. Normal local traffic on the highways and streets at the time of the bombing or emergency.
2. Long distance traffic, especially commercial traffic, destined to the stricken area or through it to points beyond.
3. The potential traffic not yet on the road. This includes the panic traffic and the traffic by persons trying to get away from the disaster area.
4. The emergency Civil Defense and military traffic coming to the assistance of the stricken area.

It is quite evident that, in working out a method or system of traffic control for these four types of traffic, a great many things other than conventional traffic control in any city or area are involved. Consequently, basic policy must be determined and the cooperation of many different governmental units must be obtained.

Cooperation Required

It is generally conceded that in the event of atomic attack a stricken city or area will not possibly be able to take care of itself. There is no populated area in this country that is that self-sufficient. No matter how well the Civil Defense plans are laid, there is a very real possibility that much of the equipment and material needed to combat the effects of such a bombing may be destroyed in the bombing. Thus Civil Defense becomes a cooperative effort, one of mutual aid, with no ready method of determining who will aid and who will be aided.

Certain target areas may be considered more attractive targets but the fact that both the invading planes and the defenders operate at hundreds of miles per hour makes nearly all populated areas subject to accidental if not intentional bombing. This situation demands that traffic control be set up not only in individual cities and areas but throughout the whole area of a state and adjoining states.

A simple summary of basic policy or need can thus be stated:

1. Keep all the streets in the stricken area clear of normal traffic, especially the major thoroughfares.
2. Reroute long distance traffic at points far enough from the stricken area to prevent clogging of highways.
3. Prevent wholesale evacuation and thoughtless panic in the stricken area; evacuate only those absolutely necessary.
4. Provide clear and free access and egress routes to the stricken area from all parts of the state or adjoining states.

Coordination Necessary

It is important that the responsibility for Civil Defense be local. It is also just as important that a central coordinating and regulating authority be established in each state. The State Civil Defense authorities are then coordinated by a Federal agency charged with that responsibility.

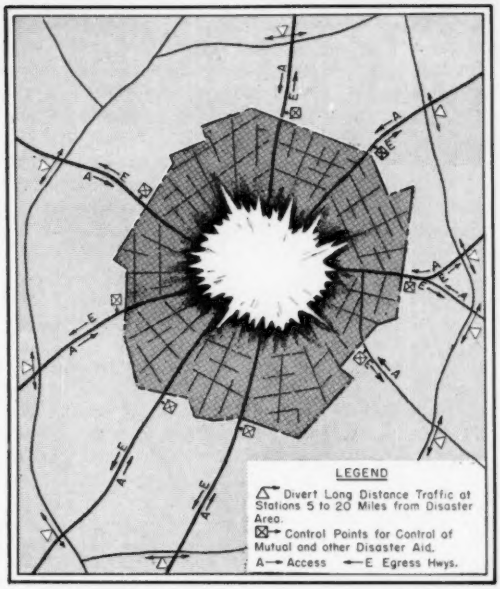
In New York State the Legislature established the New York State Civil Defense Commission, with powers:

a. To prepare basic plans for execution by local offices of civil defense.

b. To reinforce the local offices of civil defense, when required, with State and other personnel and facilities under the jurisdiction of the Commission.

c. To assist local offices of civil defense with their initial planning, upon request.

d. To coordinate the activities of local offices of civil defense, as required, particularly in the matter of evacuation and other plans requiring mutual support by counties and/or cities.


LEGEND
Divert Long Distance Traffic at Stations 5 to 20 Miles from Disaster Area
Control Points for Control of Mutual and other Disaster Aid.
A—Access —E Egress Hwys.

Typical pattern for traffic control around a bombed city.

e. To achieve maximum uniformity of planning on the local level.

f. To encourage local directors to establish small, permanent civil defense staffs, as experience has demonstrated that an efficient organization can rarely be built up with only part-time supervision and direction.

g. To test from time to time the efficiency of local offices of civil defense.

h. In the event of an emergency to mobilize resources from outside the emergency area for its support and to provide such supervision as may be necessary.

Full local responsibility is thus placed in the hands of a local Director of Civil Defense, one for each county and city. Any county and the city or cities within the county may combine their effort under one director if they so elect. The local director is responsible for all Civil Defense activities within his area. He can call on the New York State Civil Defense Commission and on all the State Departments and agencies for assistance in setting up his organization and carrying out his responsibilities.

Routes Designated for Civil Defense

In New York State, the State Civil Defense Commission has charged the Division of State Police, in cooperation with the Department of Public Works, with the responsibility for setting up and establishing routes of ingress and egress to all cities in the State. Both primary and alternate routes have been selected. These routes were designated on the basis of carrying capacity, weight and clearance limitations, ease of control and geographical features. In the event of a disaster or bombing, the primary routes leading to the stricken area will be immediately closed to all traffic, except Civil Defense and military vehicles.

These routes will be policed by State and local Police, National or State Guard, and whatever auxiliary police is required. These are the routes over which assistance, in the form of equipment, supplies, medicines, food, water and men, will flow into the stricken area. Over these same roads the wounded, sick and homeless will be evacuated.

The utilization of limited access type highways for this purpose is ideal, especially from the standpoint of control. Access to roads of this type is easily controlled with a minimum number of police. Even parkways, with their sometimes limited vertical clearances, are well suited for this purpose. It may sometimes be necessary to reroute large pieces of construction or repair equipment to other routes, but the great majority of Civil Defense and Military traffic can be readily accommodated.

These controlled routes provide for the most important traffic of all—that destined to aid the bombed area. A statewide network is thus available except for routes through cities. In cities it is the responsibility of the local defense director of each city to establish through routes connecting the ingress and access routes established by the State Police. It is also his responsibility to keep these routes clear and available at all times.

Not every access or ingress route throughout the State will be closed in the event of a bombing of one or more areas. All roads into and out of a bombed area will, however, be closed. Routes will be controlled to a point far enough away from an emergency area to insure a free flow of mutual aid into and out of the area.

Large signs to remind the public of this fact are being placed along some of these routes near major cities in New York State. They indicate that the highway will be closed in the event of bombing of that specific city. Certain other routes, not signed, will also be closed.

In the case of New York State, details of this plan are being worked out and coordinated with those of adjacent states. In this manner critical areas will be adequately served, regardless of the location of state boundaries.

Long distance commercial vehicles enroute to very large cities, or those which must pass through large cities, become a problem in the event of a bombing of the city. To take care of this situation it is desirable to set up a cordon at a considerable distance from the emergency area. In this way much vital traffic can be rerouted to or around the city as the case may be. This again will often require the cooperation of two or more states and must be so organized that it can be activated at a moment's notice.

Traffic Control

It is realized by those charged with proper planning for Civil Defense that the traffic problem will become more acute, the nearer the approach to the emergency area. As indicated previously, this is the result of local traffic, panic traffic and, in a relatively short time after a bombing, the mutual aid traffic. It should be readily apparent that the

Education is needed in every way possible.

only traffic that is actually necessary immediately after the bombing is the mutual aid or organized Civil Defense traffic. It is therefore not only desirable but an absolute necessity to intercept and stop all other traffic.

In New York State the Civil Defense Commission has set up the following regulations:

1. No vehicular traffic other than Civil Defense and military vehicles, or supply vehicles cleared by Civil Defense authorities, may move into or out of a city which has sustained enemy attack, for a period of at least twenty-four hours after such attack.

2. No private vehicle may be operated within the boundaries of a city which has sustained enemy attack without authorization of the local Civil Defense Director.

3. The penalties provided in Article 8, Section 101 of the State Civil Defense Law shall apply to any person violating this regulation.

Local Directors, therefore, should incorporate into their procedures a provision that at first alarm every motor vehicle should pull to the curb or off the pavement and remain there until authorized to move by proper police authority. This should be rigidly enforced by regular and auxiliary police. The general public should be repeatedly instructed in this matter through a complete educational program in every area.

Education Required

Probably one of the greatest problems will be the control of panic traffic. Some people will want to get into their cars and rush out of the city or damaged area. To control properly this type of traffic a great deal of educational work must be done now, before anything happens. It must not be a one-shot program; it should continue until every resident of every city and populated area knows what to expect, what to do and what not to do.

A little thought will show that far more damage and injury will result from panic flight than from remaining in the area. Only those who are injured, sick and homeless should be evacuated. If, after a bombing, the individual still has a reasonable amount of shelter, heat, water and sanitary facilities he is much better off at home. Uncontrolled flight will end on highways clogged with disabled and gasless cars. There would be no food, no water, no sanitary facilities and no method of getting the multitudes, the thousands upon thousands of stranded men, women and children to shelter of some kind. The most serious result of such flight would, of course, be the prevention of aid moving into the stricken area. The loss of life resulting from uncontrolled panic and flight could be greater than that caused by the bombing itself.

A thorough educational program is therefore of primary importance. This alone, however, is not enough. Not everyone will listen to or be persuaded by an educational program. It will require some carefully planned police work to insure proper control.

Sufficient auxiliary police should be available to cover every local area in each city. These police should get to their stations at the earliest possible moment. They should prevent unauthorized vehicles from moving or starting out. If this control is effective, the problem of panic traffic can be largely solved before it starts. However, provisions should be made at or near city lines actually to block highways and turn back unauthorized vehicles. Similar check points should be set up within the city at important feeder routes.

Another traffic generator that should be short-circuited by an educational program is that of parents who will try to rush to schools to get their children. A casual observation of the Civil Defense activities in most of the schools indicates that the children will know more about taking care of themselves than will the parents. They will be safer together, under the supervision of their teachers, than they will by being exposed unnecessarily on city streets. They will be brought home in due time and will probably fare better through the special training they receive and the special arrangements that will be made for their welfare. It is quite evident therefore that a proper Civil Defense program in every school will eventually bear fruit as an effective traffic control measure.

Traffic control thus boils down principally to education. In an emergency area any normal traffic control system will probably be out of operation. It will be necessary to depend wholly on men for its successful accomplishment. The only way that men, especially the many men that must be used, can do a job is for them to know what to do and when to do it. This means that any plan must be simple, sensible and sure. It means that practically everyone must be instructed; they must know and understand.

The regular police must know their job; the auxiliary police must know theirs; the doctor, the nurse, the rescue worker, the fireman, the construction worker, the engineer, the foreman, the thousands who come from distant places to help must know their jobs. Even more important, they must all have confidence in one another. They must be able to leave their own homes with the feeling that if something happens to their people, someone is just as ready and willing to rush in and help them. The individual in the stricken area must know what to expect and what is expected of him. He must remember that he can thoughtlessly generate traffic that will take extra men to control. This waste of manpower and time cannot be permitted.

Traffic Engineering Responsibilities

Who is better trained and able to assist in this tremendous undertaking than the traffic engineer, both individually and collectively? Every traffic engineer should volunteer his services to his local director of Civil Defense. Every association or society of traffic engineers should be ready and willing to act as consultants in the broadest sense of the word. The traffic engineer, as an individual, should satisfy himself that proper Civil Defense planning and organizing is being done in his own local area. It is quite evident that the traffic problems that will be encountered will be somewhat different than normal traffic problems. Non-essential traffic can be eliminated by proper planning and organization. Essential Civil Defense traffic must move.

Under these conditions the traffic engineer will no longer be concerned with service to the general public. His job will be service to the injured, to the homeless and to the dead and dying. He will not be concerned with getting traffic where it wants to go. Rather he will be exerting his utmost to get essential traffic to the points where it is urgently and vitally needed. His training and experience will guide him effectively in this unorthodox traffic problem.

Civil Defense is everybody's job. Its success depends not on how well one person or one group does his job but on how well everyone does his job. It is a cooperative effort; make sure that you do your job well, not only as a traffic engineer but also as John Doe, Citizen.

Hourly and Daily Variation in Vehicle Speeds on a Rural Highway

By Robert L. Meyer
Associate Engineer, Traffic Engineering Section,
Nebraska Department of Roads and Irrigation

THE whole subject of vehicle speed appears to be fraught with unknown factors. Among these is the confidence that should be placed in the results of spot-speed checks.

A primary requisite, of course, is to obtain an adequate sample—adequate in the sense that the results will be valid statistically. Of course, many spot-speed checks serve only as a guide, and a fine degree of accuracy is not necessary. However, speed checks are frequently made in the conduct of research in which precision is more important.

Presuming that vehicle speed is a whim of human behavior and, as such, is subject to change with or without an external stimulus, it seems reasonable to set forth the contention that vehicle speeds can vary according to the hour of the day, day of the week, and month or season of the year. If such a variation does exist and if it is significant, it would seem that spot-speed checks should be adjusted in some manner if the results are to be applicable at other times of the year.

This investigation was made to determine the hourly and daily variation in speed under free-flow conditions. The data consists of continuous speed observations at a single location for a period of one month. (Feb. 3-March 3, 1951.)

Location of Study

In order to study vehicle speed under free-flow conditions, it is first necessary to have a location where the effect of such elements as pedestrians, roadside development, and near-by intersections are eliminated. In other words, such a location must be non-urban in character. The site must also be so arranged that sustained observation can be carried on without interruption.

The location at which this study was conducted ideally filled the above specifications. All the base data were obtained at this site which is on U. S. Highway 6 in the State of Nebraska. The exact location is a point three miles east of the City of Lincoln.

The highway at the study site and for several miles in both directions has a Portland cement concrete surface, and is 24 feet wide with two 12-foot lanes. The concrete was placed in 1949 and is in excellent condition. The stabilized shoulders are eight feet wide and are sodded. The roadway is flat in both directions for several miles. There are no curves in the vicinity and sight distance is unobstructed.

During the period of the study, the volume during the daylight hours on week days varied between 100 and 200 vehicles per hour. Nighttime volumes were somewhat lower. Only on Sundays did the volume exceed 200 vehicles per hour, and then it very seldom was over 250. Generally, between 15 and 25 per cent of the volume was comprised of out-of-state vehicles. Commercial volume varied between 15 and 20 per cent of the total volume.

Mr. Meyer was a student at the Yale Bureau of Highway Traffic during the academic year 1950-51, and this article is based on his student thesis research.

Because of the comparatively low volumes, headways were generally high. At various hours during which headways were observed, they varied from one second to 229 seconds, the average being between 25 and 30 seconds.

Field Apparatus

All the base field data were obtained by the use of an Electromatic Speedmeter which operates on a radar principle. The speedmeter was operated in connection with an Esterline-Angus recording machine so that sustained observation could be made with a minimum of manual effort. A 110-volt electric line supplied the power.

Method of Procedure

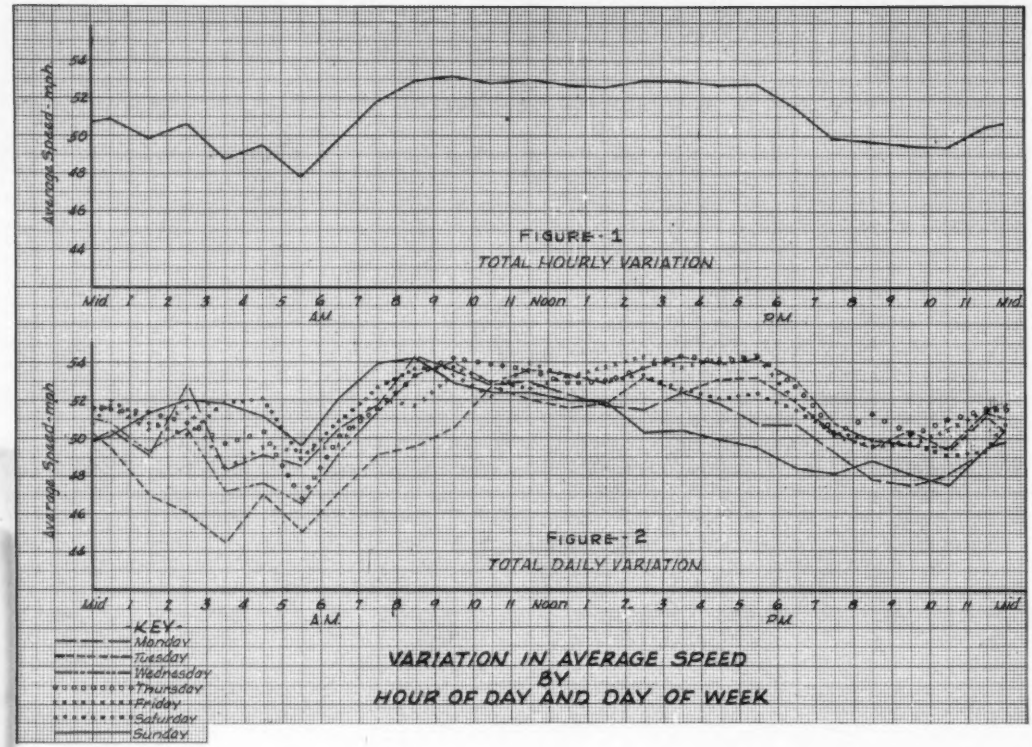
The location at which this study was conducted is set up as a permanent observation site and operated by the Traffic Engineering Section of the Nebraska Highway Department. Every attempt has been made to make the arrangement as inconspicuous to the motorist as possible. The speedmeter and observer, or automatic recorder, as the case may be, are housed in a small building among a clump of cedar trees, approximately 35 feet from the edge of the pavement. There are small windows on the three sides overlooking the roadway, and by looking through small openings in the trees, an observer has a view of the highway in all directions. To complete the disguise, the wave transmitter unit is set along the edge of the roadway in a wooden box on a post in a form to resemble a rural mail box. The transmitter unit is connected to the meter and power unit in the building by a long electric cable which runs down the side of the post and across the ground to the building. This deception has been quite successful.

The equipment was set into operation on February 3, 1951, and it ran continuously 24 hours every day for 28 days, until March 3.

During this time a record was kept of weather conditions on such items as temperature, type and quantity of precipitation, wind direction and velocity. Whenever it was apparent that inclement weather presented unfavorable driving conditions, the speeds recorded during that time were withdrawn from the study.

Analysis of Data

In order to analyze the data, it was necessary to transcribe the data as it appeared on the recorder tapes. To accomplish this, each speed registered was recorded as a tally mark opposite that speed on a specially prepared form. This initial tabulation was carried on chronologically, just as the data appeared on the tapes, beginning a new frequency distribution each hour. After all the base data had been transcribed, it was necessary to retabulate this data so as to combine and arrange it in an hourly and daily order. From the combined and accumulated totals of similar hours and days, the arithmetic mean for each of the 24 hours for every day of the week was calculated. It is these arithmetic means



which are used to develop the degree of any time-speed variation which might exist.

In order to bring out the operating characteristics of those drivers who are not apparently affected by another vehicle going in the same direction, an attempt was made throughout the transcribing of data to tabulate only those vehicles which appear to be free flowing. The recorder tapes can be interpreted by the gap between the registrations when two or more vehicles, traveling in the same direction, were so close to each other that they were very probably not operating as free flowing vehicles. When that relationship was noted on the tapes, only the lead vehicle was tabulated so that throughout the analysis the results indicate the operational pattern of relatively free flowing traffic.

Before developing any conclusive results, it was first necessary to determine the degree of similarity between similar hours and similar days during the month. In other words, to what degree of reliability could all Mondays be combined; or could all similar hours, irrespective of days, be combined with a definite degree of stability. The feasibility of such combinations was determined by the manipulation of various statistical formulae involving the arithmetic means, standard deviations, and standard errors of the means.

In this study, the speeds of 62,851 vehicles have figured in the results of the various tabulations. It was felt that a large sample was necessary to obtain reasonably stable results and to minimize any variation in speeds that may be attributed to chance.

After applying certain statistical methods, the following degrees of reliability and stability have been developed and can be applied throughout the analysis:

1. In comparing the variation in means of different hours in which all days have been combined, any variation greater than 0.80 mile per hour will be due to something other than chance 95.5% of the time. (Two standard errors.)
2. The mean speeds for any hour of any particular day may vary 1.4 miles per hour within the realm of chance 95.5% of the time.
3. When the mean speeds for the same hour are compared for the different days of the week, they may vary 2.1 miles per hour, above which the effect of chance can be considered removed.

Results of Analysis

The calculated mean for each hour for every day, as well as the mean for each hour when all days are combined, is shown graphically in Fig. 1 and Fig. 2.

The curves shown in these figures indicate that a definite time-speed variation does exist. Considering first, the combined total hourly variation, speeds decrease from an average of 50.9 miles per hour between midnight and 1 A.M. to a low average of 47.8 miles per hour between 5 and 6 A.M. Beginning at that hour, the means increase regularly to a high of 53.2 miles per hour between 9 and 10 A.M. The curve then levels off into a comparatively flat plateau until the hour between 5 and 6 P.M. Speed begins to drop off at that point and continues on a downward trend for the next five hours. Between 10 and 11 P.M., the mean makes a curious rise of 1.1 miles per hour from a P.M. low of 49.4 miles per hour to 50.5 miles per hour during the

hour from 11 P.M. to midnight.

Another curious shift in pattern occurs during the hour from 4 to 5 A.M. During this time, the mean rises 0.7 mile per hour above that of the previous hour. Within the following hour a sharp drop of 1.7 miles per hour takes place, to reach the daily low of 47.8 miles per hour between 5 and 6 A.M.

Regardless of the hour of the day, it was noted that there were always a few drivers who desired to travel over 65 or 70 miles per hour, or those who persisted in "poking" along under 30 miles per hour. Whenever the mean speed changed, it appears to be brought on more by the shift of the large mass of drivers who were traveling above 30 miles per hour and under 65 miles per hour. Fig. 3 points out this shift of speeds. The cumulative curve for any of the distributions will assume the same normal shape and fall into the range bounded by the curves representing the distributions with the highest and lowest means. The curves shown are for hours with a wide range of volumes; but irrespective of volume, the curves maintain a very similar shape. This is in accord with some of the results of Loutzenheiser's work on rural highway speeds.[1]

Since the total hourly variation during the week is dependent on what occurs during each of the individual days, it logically follows that most of the seven days would probably assume an operational pattern similar to the curve in Fig. 1. A glance at Fig. 2 verifies this contention. The overall patterns are very similar with variations only in magnitude of different means.

There are, however, two days which do not conform to the pattern filled in by the other five days. These are Tuesday and Sunday.

Tuesday is nonconforming in that the mean speeds between midnight and 10 A.M. are much lower than for any of the other days during similar hours. The difference in several instances is outstanding. These differences are not confined to hours of darkness alone. While on all the other days, the daily peak is reached before 10 A.M., Tuesday's apex takes place an hour or more later. After 11 A.M. the curve for Tuesday takes a more normal place among the group.

Generally speaking, the entire operational pattern for Sunday differs from the rest of the week. The speeds are different, the hourly volume also differs, and very probably the trip purpose for most drivers on the highway is different on Sunday than any other day.

Instead of maintaining a rather regular level between 10 A.M. and 6 P.M., as is more or less prevalent on other days, Sunday's speeds begin a steady decline after 9 A.M., at which time a high of 54.2 miles per hour is reached. The decline is rather regular until a low of 47.5 miles per hour is reached just prior to 11 P.M. However, just as on all weekdays, Sunday's speeds take a sharp increase after 11 P.M.

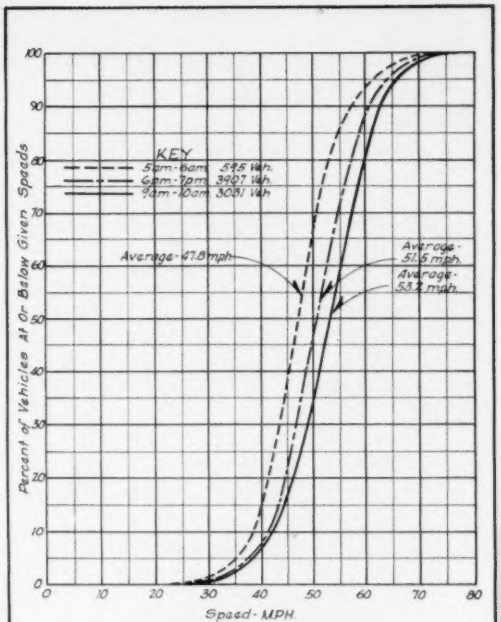
Summary and Conclusions

Based on the analysis, the following conclusions are set forth:

There is definitely a time-speed variation during the 24 hours of the day.

The greatest single factor in causing a variation under normal and favorable operating circumstances is apparently the light condition.

[1]D. W. Loutzenheiser, "Percentile Speeds on Existing Highway Tangents," *Highway Research Board Proceedings*, Vol. 20, 1940, Washington, D. C., pp. 372-390.



COMPARATIVE CUMULATIVE DISTRIBUTION CURVES

FIGURE 3

Daylight mean speeds are approximately 5 miles per hour higher than mean speeds during hours of darkness.

There is not a sudden transition between daylight and darkness speeds. The high and low points are reached gradually. For example, the daylight level is not reached until 10 A.M., which is about four hours after daylight begins.

After the daylight level is reached, there is very little fluctuation during the remainder of the daylight hours. Nighttime speeds are a different matter in that there is considerable fluctuation. Two curious shifts in trend take place during the darkness hours. One occurs between 4 and 5 A.M. when the mean rises, and then drops considerably during the next hour. The other shift takes place just prior to midnight when the mean rises 1.4 miles per hour.

In regard to daily variation, there appears to be no significant difference between various days of the week, with the exception of the morning hours on Tuesdays. For some reason, unknown at this time, there is an outstanding difference in Tuesday morning speeds, compared to other days. This warrants further investigation.

Speeds on Sunday do not follow the pattern set by weekdays. After the peak mean is reached between 8 and 9 A.M. the means begin to decline throughout the remainder of the day.

In conclusion, it should be kept in mind that this study is for only one location on one highway, and during only one month of the year. Similar studies need to be made in other localities, and certainly during the other months of the year.

It is believed that by compiling a year round, state-wide set of speed standards, speed checks taken at any time can be projected more accurately to ascertain what the speeds will do at other times.

Reference Notes

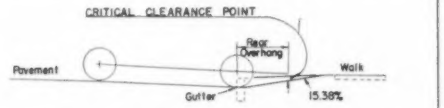
Adopted From

"Highway Survey & Design Manual"—1950
Michigan State Highway Department,
Lansing, Michigan

Design of Private Entrances

IN the design of private entrances, consideration must be given to the fact that where the grade of a drive becomes too steep between the pavement and sidewalk, certain vehicles will not clear. The critical clearance point is the rear bumper guard or exhaust pipe.

Measurements of a number of 1948-1949 passenger vehicles show an under-clearance of 10.5 to 15.5 inches at the lowest point in the rear of the vehicle. The accompanying table is based on the lowest (10.5 inches) under-clearance, less a chassis deflection of 3 inches caused by an assumed load of 450 lbs. in the rear seat.



MAXIMUM SIDEWALK HEIGHTS ABOVE GUTTER

Distance from face of curb to sidewalk	Maximum height of walk above gutter	Distance from face of curb to sidewalk	Maximum height of walk above gutter
1'	7⅛" (0.62')	9'	1-4½" (1.38')
2'	7⅛" (0.62')	10'	1-6½" (1.54')
3'	7⅛" (0.62')	* Beyond a point 10' from the gutter, the driveway grade may be steepened, but in no instance shall the slope meeting the sidewalk exceed 30%.	
4'	7⅛" (0.62')		
5'	9⅛" (0.77')		
6'	11" (0.92')		
7'	1'-1" (1.08')		
8'	1'-2¾" (1.23')		

The table shows an allowable difference in elevation between gutter grade and sidewalk from 7.5 inches where sidewalk abuts curb to 1.5 feet where the sidewalk is 10 feet from the face of the curb. Where the grade cannot be established within these limits, it is necessary to lower the sidewalk.

(Continued from page 335)

capacity indicated by the operator is reasonable and that the operation of the parking facilities will not necessitate the use of public sidewalks or streets in conducting the parking and unparking operations. We also found that the location of the attendant station has a marked affect upon the temporary storage capacity at the entrance in that drivers have a tendency to stop at the station no matter where it is located. In the interest of increasing this reservoir space so that waiting cars would not block sidewalks and streets, the ordinance provides authority for the Traffic Engineer to require that these stations be located as far from the entrance as practicable.

Inspection of School Buses

Another responsibility which the City Council placed upon the Traffic Engineering Division resulted from a serious school bus accident a few years ago in which it was determined that a school bus with inadequate brakes driven by a young man who did not have the necessary training was involved in the accident. An ordinance was adopted with certain requirements for school bus equipment and a special license for school bus operators and the Commissioner of Licenses was required to receive a certificate of approval from the Traffic Engineer before issuing such licenses. This ordinance provides for periodic inspection by the Traffic Engineer of the equipment and further gives authority to make reasonable regulations concerning the equipment, operation, and the handling of children in these buses. The Traffic Engineer is required to conduct examination of applicants for school bus chauffeur's license to determine if they are properly qualified and the ordinance requires that the Traffic Engineer's approval shall be submitted to the License Commissioner prior to issuing such license.

As the Traffic Engineering Division approaches the age of maturity, it will be noted from the foregoing discussion that many additional responsibilities have been added since the inception of the Division. Some have been mentioned previously while many others of relatively minor importance have been omitted because of lack of space. In summation, it might be said that we are proud of some of our accomplishments and we are humbled by our inability to do an even better job. Certainly, we are challenged by what the next decade will bring.

We Invite Your Inquiries on . . .

SIGNAL and
LIGHT POLES

TRANSFORMER BASES

PEDESTALS

CONTROL HOUSES

- - - Good Delivery - - -

HRUBETZ & BUSHNELL
FRONT and SHIPPING STREETS
SALEM OREGON
Telephone 3-7417

TRAFFIC NEWS

Committee To Study Role Of Road Research Body For Canadian Good Roads Federation

Ottawa headquarters of the Canadian Good Roads Association has announced that six leading authorities will serve under Dean R. M. Hardy of the University of Alberta on a pilot study committee which has been asked to lay down a plan for a Canadian highway research institute. Such an institute, it is believed, could render valuable service to the transportation field in helping to solve pressing road problems.

The basic working committee, which may be added to as the pilot study progresses, has been chosen as representing many phases of highway engineering, economics and construction as well as traffic control and safety.

It includes, as nominees of the Ontario Research Council, two nationally known experts on materials, Dr. N. W. McLeod and D. O. Robinson, both members of the ORC highway advisory committee; Philippe Ewart, chief of the traffic engineering bureau of the Quebec Department of Roads; Colonel W. Arch Bryce, director of the division of public safety, University of Toronto; Dr. C. G. Stogdill, chief, mental health division, Department of National Health and Welfare; and Alan Hay, chief engineer of the Federal District Commission.

The committee members work entirely on a voluntary basis. The actual costs of the pilot study are being almost entirely underwritten by industry. A "blueprint" for a national road research body will be ready for presentation to the annual convention of the Canadian Good Roads Association next November. Such an institute would work closely with all related organizations and would also keep watch on projects abroad to adopt findings to Canadian conditions wherever possible.

One of its most important functions would be the collection, collation, publication and widespread distribution of technical, statistical and educational material which might help to improve road systems throughout the country and contribute to the efficiency and economical operation of road transportation.

Mr. Ewart has been in charge of the traffic engineering bureau of the Quebec Department of Roads with headquarters in Montreal since 1946. He is a member of The Engineering Institute of Canada, the Corporation of Professional Engineers, and the Institute of Traffic Engineers.

"One Hundred Years of Transit Progress" will be the theme of the American Transit Association's third national observance of "Transit Progress Day" which this year will take place on Monday, September 24th.

The year 1851 marked the beginning of public transit as an industry due to widespread acceptance of the horsecar in city transportation, although in a few large cities the nucleus of a transit service was in operation before that time.

Today there are about 260,000 men and women in this country who derive their livelihood from running the public transit industry in nearly 1,400 communities. More than 80,000 rapid transit vehicles, streetcars, trolley coaches and buses are now in daily operation, a far cry from the few horsecars which started this national industry a century ago.

National publicity and tie-in with associated industries supplying transit with everything from basic materials such as copper, aluminum, steel, rubber and nickel to electrical power, gasoline, lubricants and propane gas, will be handled through John C. Cropper, American Transit Association at 292 Madison Avenue, New York 17, N. Y. Statistical material, photographs and other pertinent information are available to all allied industries and business firms who desire to join the American Transit Association in this observance of its "One Hundred Years of Transit Progress."

New Transportation Policies of U. S. Chamber of Commerce

New policies affecting government regulation of transport, emergency mobilization measures, civil aviation and urban transportation were adopted by the membership of the Chamber of Commerce of the United States at its 39th Annual Meeting in Washington, D. C.

The new policies urge that all federal transportation regulatory, administrative and promotional functions (except for emergency transport) be centralized under one permanent agency responsible directly to Congress.

Previously, the Chamber had advocated such a single agency but with separate regulation of air and international ocean transport for a further reasonably limited development period.

The new action was based on the desire to help assure development and maintenance of a balanced, competitive, and financially sound privately-owned and operated transport system. Pending development of the single agency, the Chamber also urges that the Interstate Commerce Commission, the Civil Aeronautics Board, and the Federal Maritime Board be kept free of controlling influence by the executive branch of the government.

In another new policy, the Chamber calls for active cooperation of regulatory authorities, carriers, and users in the conservation and efficient use of all transportation facilities. Adequate allocation and priorities for manpower and materials, and proper representation of transport requirements by government officials are stressed.

The question of restrictions on highway use by large trucks is agreed to be a matter of state, not federal, regulation, and states are urged to enforce rigidly all such motor vehicle size and weight rules.

New urban transportation policies recognize the utility and benefit of by-pass expressways around congested urban areas and advocate application of modern traffic engineering techniques on existing streets. Need for proper

municipal traffic engineering administration is also recognized.

Regarding urban public transit, the Chamber asserts that a levy of discriminatory taxes on public transit for the privilege of operating over city streets is contrary to the public good and should be eliminated. This view results from recognized need for bettering the economic climate in which bus and street car companies operate.

Businessmen and property owners are urged to take the initiative in providing needed off-street parking facilities, and the value of assistance by public authorities in the assembly of land is recognized. The policy recommends private, not municipal, operation of any publicly provided lots or garages (where operators are required) and advocates community regulation, except as to parking fees.

Turnpike Model On Display

A new sixteen-foot model of New Jersey's 118-mile Turnpike has been placed on display in the rotunda of the New Jersey State Capitol. Built to a scale of 1.3 inches to the mile the model shows the route of this privately-financed super-highway, its seventeen traffic interchanges and their connections to leading east-west public highways.

Connections to the metropolitan New York City and Philadelphia areas, in detail, also are depicted.

In addition to the model, the New Jersey Turnpike Authority's exhibit at the State Capitol comprises scale models of a typical toll plaza and restaurant, together with architects' renderings in full colors of the Turnpike's traffic interchange at the Black Horse Pike leading to Atlantic City and other shore resorts, its Raritan River Bridge, the Authority's central maintenance shop in Hightstown and the service area in Woodbridge (service stations, restaurants and parking facilities).

The model will be made available for use at conventions and other public functions to acquaint motorists and truckers with the Turnpike route and its connections to public highways.

Scheduled for opening to traffic late this year, New Jersey's new Turnpike will proceed diagonally across the State from a point near the George Washington Bridge, in Bergen County, to Deepwater, in Salem County, where it will connect directly with the new Delaware Bridge to be opened to traffic this summer.

When it comes into operation the Turnpike will offer substantial relief from congestion on the leading public highways. It will supply a safe, rapid and economical traffic artery for the motoring public, effecting savings in travel time and in overall vehicular maintenance costs.

Off-Street Parking By Zoning

According to a recent survey by the Highway Research Board at least 185 localities had ordinances in late 1949 requiring the provision of off-street parking space in connection with one or more property uses. This total included local governments of all kinds—cities, towns, villages, boroughs, counties and townships.

Only five of the 13 cities with a 1940 population of more than 500,000 were found to have a zoning ordinance requiring builders to provide off-street parking facilities for tenants or users of new buildings. These cities were Cleveland, Chicago, Detroit, Los Angeles and Washington, D. C. Since completion of the survey, however, New York City has adopted such a zoning amendment. Two heavily populated counties—Cook (Chicago) Ill., and Milwaukee, Wis.—were found to have county-wide zoning laws requiring property owners to furnish car parking areas to their tenants.

Twenty other places of more than 100,000 population also sought relief from their parking problem through zoning laws under their police powers. Included among cities in this group were: Hartford, Conn.; Atlanta, Ga.; Peoria, Ill.; Des Moines, Ia.; Kansas City, Kan.; Cambridge, Mass.; Kansas City, Mo.; Omaha, Neb.; Rochester, N. Y.; Nashville, Tenn., and Richmond, Va. The most recent city in this size group to adopt an off-street parking ordinance this year is Miami, Fla.

Not all of the local ordinances analyzed by the Research Board required provision of parking facilities in connection with all possible property uses. Predominantly, the zoning ordinances were found to deal with multiple family structures. In only about half of the 64 localities which require parking facilities in connection with general business or commercial enterprises are the zoning ordinances effective in the downtown business areas.

The study also showed that, generally, neither state constitutions nor state enabling legislation need to be amended in order for cities to enact laws dealing with off-street parking facilities in connection with various property uses. The provisions of state constitutions and statutes are usually broad enough to authorize this type of control through the police power.

Midwest Inspection Journal

Highway Study Committees Considered In 13 States

Creation of highway planning committees and other related study committees has received legislative attention in at least 13 states, a survey by the National Highway Users Conference discloses.

A *North Dakota* law directs the Legislative Research Committee to study and analyze all facts pertaining to development of a program of construction, improvement, efficient administration and sound financing of highways, streets and bridges. The committee is to arrive at an informed estimate of the total costs of such a program and determine how such costs can be allocated to the state and various government units in accordance with the benefits to each.

A new law in *Washington* continues for another biennium "The Joint Fact-Finding Committee on Highways, Streets and Bridges," consisting of six Senators and six Representatives. The committee is authorized to participate in the "Western Interstate Committee on Highway Policy Problems" of 11 western states, review the state highway system and participate with the Highway Department in studies of motor vehicle weights and highway design and cost, and testing of Natural Resource Roads.

A bill in *Pennsylvania* would create a permanent Highway Planning Commission to study ways and means of financing public roads, equitable distribution of highway user revenues, and consult with the Highway Department and local authorities on highway programs. A *Wisconsin* bill would authorize the Joint Legislative Council to continue its study of highway problems and prepare reports toward a balanced

highway system and a long-range highway improvement program.

In *Colorado* and *Utah*, official highway study committees are being continued another year and users are cooperating in developing a reasonable plan on which all can agree. Proposals for highway study committees were also introduced in *Maryland*, *New Mexico* and *New York*, but died upon adjournment of the legislatures.

A *California* proposal would create an Interim Committee to study the Interstate Highway System, while a committee in *Maine* would develop a priority schedule of improvements on the state highway system to assure orderly development in accordance with needs. A *New Hampshire* measure provides a committee to study reclassification of highways. A proposal in *Iowa* to study highway construction and the effect of traffic thereon, died upon adjournment of the legislature.

Origin and Use of the Word "Engineer"

The word "engineer" is derived from the Latin "ingenium" meaning ingenuity, creative spirit, invention. Its historical evolution dates from the year 1067.

As far back as 1130 A.D., the word "engineer," in its early forms, meant one who applied ingenuity, creative spirit or invention to the planning, designing or contrivance of machines and other ingenious devices.

The word "engine," derived from the same root "ingenium," means an ingenious contrivance.

For more than eight centuries, the word "engineer," including its early forms, has meant the designer, inventor and creator of engines and other ingenious contrivances. For but little more than a century the word "engineer" has been misapplied, as a secondary use, to operators of engines, locomotive drivers, boiler tenders and other similar designations. The weight of historical and etymological precedent is on the side of the application of the word "engineer" in the professional sense.

The man who operatese a steam engine is an "engine operator," not an "engineer." The man who designs the engine is an "engineer" generally classified as a mechanical engineer.

New York Professional Engineer

LOOKING AHEAD

AUGUST 27-30, 1951—WASHINGTON, D. C.
Illuminating Engineering Society. National Technical Conference. Hotel Shoreham.

SEPTEMBER 9-13, 1951—POLAND SPRING, MAINE
International City Managers' Association.

SEPTEMBER 16-19, 1951—DETROIT, MICHIGAN
American Public Works Association. Public Works Congress and Equipment Show.

SEPTEMBER 17-20, 1951—SAN FRANCISCO, CALIFORNIA
56th Annual Meeting, International Municipal Signal Association, Inc. Mark Hopkins Hotel.

SEPTEMBER 23-27, 1951—LOS ANGELES, CALIFORNIA
Annual Meeting, Institute of Traffic Engineers. Ambassador Hotel.

SEPTEMBER 30-OCTOBER 3, 1951—GATLINBURG, TENNESSEE
Governors' Conference.

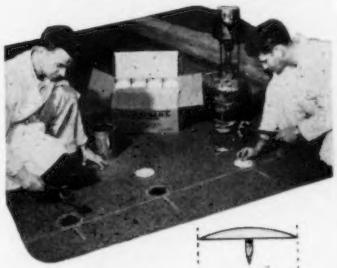
OCTOBER 8-11, 1951—BOSTON, MASSACHUSETTS
American Association of Motor Vehicle Administrators. 19th Annual Conference. Copley Plaza Hotel.

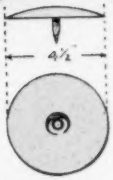
OCTOBER 8-14, 1951—LIMA, PERU
Fifth Pan American Highway Congress.

DECEMBER 3-5, 1951—WASHINGTON, D. C.
American Municipal Association. Hotel Statler.

SAVE 50% ON STREET MARKING COSTS WITH DUR-O-LINE

(Available in Safety White, or Traffic Yellow)





A TENITE PLASTIC STREET MARKING SYSTEM

No More Repainting Costs
No More High Labor Costs

- **DUR-O-LINE** markers pay for themselves in one year. Cost of DUR-O-LINE Markers installed equals average cost of 2½ paint jobs.
- **DUR-O-LINE** marked streets are more attractive—the brilliant 4½" markers do not fade or smear.
- **DUR-O-LINE** markers have three times the visibility of painted lines.
- **DUR-O-LINE** markers are designed to withstand severest traffic conditions. Load tests prove that they can carry 15 times the maximum legal load limit.
- **DUR-O-LINE** markers are easy to install. A two-man crew can lay 100 markers in an hour. No traffic tie-ups. Traffic can run over markers as workmen lay them.
- **DUR-O-LINE** markers can be used on either asphalt or concrete pavements.

TRIAL OFFER
As a special offer 200 markers and laying material for 400 to 1200 linear feet is available for only $52. ($67. for concrete streets.) Test this sample offer on your busiest street. Shipped prepaid.

TRAFFIC SAFETY SUPPLY CO.
2700 NE Sandy Blvd., Portland 12, Ore.

Trend is to Staggered Driver License System, Survey Shows

A definite trend towards the staggered system of driver license expirations and towards issuance of licenses for longer than a one-year period is indicated in a survey just completed by the A.A.M.V.A. headquarters office in Washington, D. C.

Eight of the 11 states in Region III (Midwest) having driver license laws now are using the staggered system. The three states in this region still using the fixed date of expiration are Kansas, Nebraska, and North Dakota, and in all three the licenses expire every odd year. South Dakota has no license law.

Seven of the 11 Region IV (Pacific Coast and Rocky Mountain) states use the staggered plan. Fixed date of expiration is still the rule in Montana, Nevada and New Mexico, while in Arizona driver licenses are good until revoked.

Half of the 14 Region II (South) states have adopted the staggered system. Only in Region I (New England and Middle Atlantic) states does the number still using fixed date of expiration exceed the number operating on a staggered basis. Of the Region I jurisdictions, only the District of Columbia, Massachusetts, New Hampshire and Vermont have switched to the newer method (staggering).

The Canadian provinces, with the exception of Alberta, also hold to the fixed date expiration.

Of the 26 states now using the staggered system, 15 have adopted the birthdate expiration plan. The other 11 and the District of Columbia issue operator licenses good for from two to four years from date of issuance.

Every Canadian province still issues licenses good for only one year. On the contrary, every state in Region III having a driver license law issues the licenses for two or more years. Only two states in Region IV, Montana and New Mexico, and only four in Region II, Arkansas, Florida, Georgia and Kentucky, still hold to the one-year plan of issuance.

The balance in favor of the one-year plan is evident only in Region I, where eight of 12 jurisdictions issue for one year. The District of Columbia and New York are on a 3-year basis, while Massachusetts issues for two years. In Maryland, as in Arizona, operator licenses are good until revoked.

Four years is the maximum period for which licenses are good in any state. West Virginia, the Carolinas, Minnesota, Wisconsin and California issue four-year licenses.

AAMVA Bulletin, Vol. 16, No. 2

Action Program Vigorously Reaffirmed At President's Highway Safety Conference

The Action Program for safer motor vehicle transportation was given strong impetus at the President's Highway Safety Conference in Washington last month.

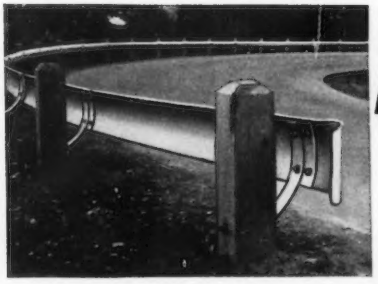
Approximately 2,000 leaders from all states in industry, farm and women's organizations, safety authorities, and federal, state and local public officials, selected points of emphasis in the Action Program to best meet the needs of the national emergency and to turn back the upward trend in traffic fatalities.

Unique from the standpoint of audience participation, the Conference closely scrutinized gains and weakness of recent years. Eleven panel sessions were devoted to specific sections of the Action Program and one general audience participation program was held on how to make the program most effective.

In the final session, the Conference declared that adoption of the program by *all* states and cities "would result in reducing the death rate from its present level of 7.5 per hundred million vehicle miles of travel to five or less within the next year." In 1945, the year before the Conference was organized, the rate was 11.3.

Gasoline Taxes

Gasoline taxes were increased from 4 to 5 cents per gallon in each of the following states: New Hampshire, North Dakota, South Dakota, Utah, and Wyoming. Georgia permitted a temporary one cent increase to expire and New Mexico reduced its tax from 7 to 6 cents per gallon. Proposed increases failed of enactment in Arkansas, Colorado, Indiana, Montana, New Jersey, North Carolina and West Virginia. Proposed increases are still pending in California, Illinois, Massachusetts, Michigan, Missouri, Nebraska, Ohio, Oklahoma, Texas, Vermont and Wisconsin.



SAFE!

TUTHILL HYWAY GUARD

Resilient convex steel rail safety deflects cars back on the road Low-mounted springs absorb impact, minimize damage to car and occupants

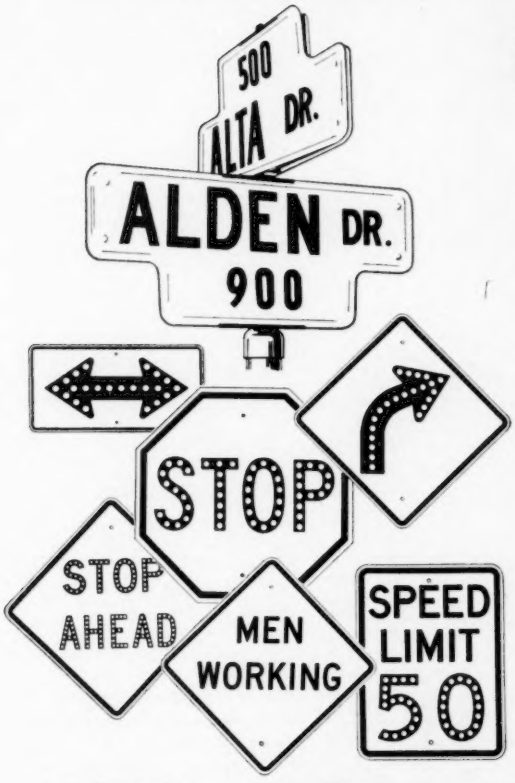
Maximum STRENGTH
Maximum DEFLECTION
Maximum VISIBILITY
Minimum COST . . .
Write Today For Brochure

TUTHILL SPRING CO.
760 W. Polk Street, Chicago 7, Illinois

PLEASE MENTION TRAFFIC ENGINEERING When Writing To Advertisers

TO EFFECTIVE

TRAFFIC CONTROL.....



Grote SIGNS

Here are high-visibility signs for practically every traffic control need; Street name plates for instant recognition of name and number; parking signs that politely enforce traffic control; road signs to improve highway safety. Built for years of dependable, long-wear service, all GROTE Signs are made of heavy, zinc coated, Bonderized steel, finished with special baked enamel processes that make them permanently bright and attractive — that resists the action of weather, salt spray, smoke or airborne chemicals. All are made to the Grote high standards of manufacture and conform to the accepted official standards and recommended uniform sign systems. For economy purchase and installation, always specify Grote Signs.

Send for our 1951 catalog of
Modern Signs for Modern Communities.

THE Grote MFG. CO., INC.
Grote Square
BELLEVUE, KENTUCKY
Opposite Cincinnati

Secretary's Column

A meeting of the Board of Direction of the *Institute* was held June 15-16 in Washington, D. C. The date and place of the meeting were selected to coincide with the President's Highway Safety Conference, because a number of Board members held important assignments with the Conference.

Several important matters of general interest were acted upon at this Board meeting. Along with other business: (1) a revised operating budget for 1951 was adopted; (2) by resolution, a new grade to be known as *"Sustaining Organization"* was proposed; and (3) by resolution, reduction in the fees and dues of Affiliates was proposed.

The revision of the 1951 budget was necessitated by the changing economic situation. Revenues of the *Institute* have gradually declined during the year and budgetary changes were required to make certain that the year's operating expenses will not exceed operating capital. The new budget clearly indicates that the present downward trend in revenues must be reversed if the *Institute* is to maintain its present activities next year without drawing on its reserve savings in the Fee Fund.

The resolution to establish *"Sustaining Organizations"* was in recognition of the contributions in traffic engineering made by associations and commercial groups. Many members, and others, have recommended the creation of the new class of affiliation intended for firms, associations and corporations desirous of aiding and furthering the objectives of the *Institute*.

The proposal provides *"Sustaining Organizations"* the right to designate one representative who may take part in all activities of the *Institute* except to vote and hold office. It further provides that *"Sustaining Organizations"* may designate up to three individuals to serve in advisory capacities with various technical committees of the *Institute* (not more than one on any committee). These privileges were designed to enlist the cooperation of *"Sustaining Organizations"* in the work of technical committees in addition to the financial assistance offered through payment of an annual fee.

The resolution to "roll back" the fees and dues of Affiliates was promoted by numerous complaints received by the Board. The proposal reduces entrance fees and annual dues of Affiliates to the amount ($15.00) charged prior to the recent increase.

Constitutional amendments creating *"Sustaining Organizations"* and reducing Affiliate fees and dues will be submitted to the voting membership prior to the Annual Business Meeting in Los Angeles, September 24. The voting membership will be canvassed on these amendments following the Annual Meeting in conformance with Article XI of the By-Laws.

Fred W. Hurd

Tentative Specifications For Traffic Engineering Positions Available

The Board of Direction of the Institute of Traffic Engineers *tentatively* approved job specifications for traffic engineering positions, at its meeting on June 15-16, 1951, in Washington, D. C.

These specifications were prepared by the sub-committee on Functions of a Traffic Engineering Department under the Committee on Traffic Engineering Administration. The Board resolved that these tentative specifications should be made available for use as a guide by cities and states. Final approval of the specifications may be subject to comments received from those using them on the advisory basis.

The specifications include the positions of state traffic engineer; city traffic engineer; traffic planning and design engineer; traffic operations engineer; traffic survey engineer; and traffic analyst.

The specifications for the position of city traffic engineer is a composite for cities in the following population groups:

a. Over 500,000 population.
b. 100,000 to 500,000 population.
c. Under 100,000 population.

The specifications describe the distinguishing features of work under each category, cites illustrative examples of work, and specifies minimum educational, experience, and other requirements for each position.

These specifications may be obtained by writing to the Executive-Secretary, Institute of Traffic Engineers, Strathcona Hall, New Haven 11, Connecticut.

SECTION NEWS

Michigan Section

Under the sponsorship of the Michigan Section, ITE, the Traffic Engineering and Planning Section of the State Safety Conference was held in the City of Grand Rapids on May 22, 23 and 24, 1951.

Jerome D. Franklin, Traffic Engineer of the City of Grand Rapids, was Chairman; Russell E. Harrison, Traffic Engineering Bureau, City of Detroit, was Vice-Chairman; and Albert C. Sherman, Michigan State Highway Department, was Secretary.

At the opening meeting Elliott F. Daniels, Assistant Chief of Vehicle Inspection Bureau, New Jersey Division of Motor Vehicles, spoke on motor vehicle inspection on a state-wide basis. Mr. Daniels gave a complete report on methods used in the State of New Jersey on motor vehicle inspection. Upon the completion of Mr. Daniel's report, a discussion was held by Mr. John R. Cross, Safety Supervisor of the Michigan Trucking Association; Mr. Edward G. Rockwell, American Automobile Association; and Sergeant Charles Holton, Michigan State Police, presented arguments for and against motor vehicle inspection.

In a second session on signal timing, Mr. Harold G. Bauerle, Past President of the Michigan Section, presented the advantages and disadvantages of a longer cycle, and the merits of signal timing were discussed with Mr. Edward Gervais, Traffic Signal Engineer, Michigan State Highway Department, and Mr. Arthur C. Gibson, Traffic Signal Engineer of Detroit Traffic Engineering Bureau.

Mr. Harold Sauer of Detroit Edison Company spoke on rural street lighting. He pointed out the reduction of accidents by more effective lighting at intersections and other specially hazardous locations.

In another session with Mr. Russell Harrison, Detroit Traffic Engineering Bureau, presiding, Mr. A. F. Malo, Director of Detroit Traffic Engineering Bureau, spoke on the role of the Traffic Engineer in civilian defense. Mr. Malo outlined the demands that would be made of the Traffic Engineer in case of an emergency and outlined the preparations that the City of Detroit is making to be ready in case of any emergency.

In the final session, Joseph Wehmeyer, Engineer of Safety and Traffic, Wayne County Road Commission, presided with Richard Fernbach, Director of City Planning of Highland Park, speaking on better use of existing streets to eliminate congestion. Mr. Fernbach pointed out the methods that can be used by a planning engineer to eliminate congestion and to work in cooperation with the traffic engineer.

Mr. J. Carl McMonagle, Director of the Planning and Traffic Division of the Michigan State Highway Department, spoke on more effective cooperation between State, City and County officials with regard to their traffic problems in order to get better relationship between various organizations.

Reported by Samuel J. Levine
Secretary-Treasurer

New England Section

The annual summer outing of the New England Section was held June 1st in Lynn, Massachusetts, where out-of-state members and wives were made the guests of the local members employed at the General Electric Lighting and Rectifier Division in West Lynn. The visitors who assembled at the General Electric plant were welcomed by A. F. Dickerson, Ralph Reed, Hal Breeding, Charles Rex, Walt Schwanhausser, Mr. Swetland, and others of the General Electric staff. A very interesting tour of the plant was conducted and assembly of traffic controllers and streetlights was witnessed. An outstanding feature of the tour was an inspection of the complete photometric laboratory where performance data for new streetlight designs are prepared.

During the plant inspection, the "G. E. Wives" escorted the visiting ladies to various scenic attractions in the Lynn area. About 5:00 P.M. everyone went to the Thompson Club for an hour of relaxation, then to a delicious steamed clams and lobster dinner. Most of the visiting members remained in the Boston area for the weekend.

Reported by F. Houston Wynn

New York Metropolitan Section

The Annual Meeting of the New York Section was held recently at the Ballantine Brewery Company in Newark, N. J. The twenty-one members and guests who attended were luncheon guests of the company and a most enjoyable time was had by all. Arrangements for the meeting were made by the Traffic Manager of the Ballantine Company and an interesting tour was made of the plant.

The "bottleneck" in beer traffic was one of the many interesting items that was discussed at the meeting.

The following officers were elected for the coming year:

Edward L. Cyr, President
T. T. Wiley, Vice-President
Louis E. Bender, Secretary-Treasurer

Reported by
Edward G. Wetzel

Western Section

The Oregon Highway Department, including Bruce Crandall, Traffic Engineer, and his crew, moved to its new quarters on June 1. The Traffic Engineer finally got moved from the "country" to the "city" so those of you stopping by for a visit, come to the Capital Plaza Group and you will find Crandall and his crew on the third floor, Room 307. Drop in and see them.

The Fourth Annual Northwest Traffic Engineering Conference was held in Seattle May 16 and 17. A very well-rounded program was on tap. For those fortunate enough to attend, the two-day session was a fruitful one. The following members of the Western Section were among those who registered: Henry F. Aumack, R. G. Bates, J. W. Arch Bollong, W. H. Carsten, John L. Chaffee, F. B. Crandall, Bruce R. Culver, G. R. Cysewski, Robert Dunn, Fred Fowler, J. A. Gallagher, H. C. Higgins, Norman Kennedy, Ralph W. Kerslake, Emrys Lewarch, Don Manning, E. L. Mathes, M. R. Mitchell, D. E. Morris, R. E. Schmidt, Rex G. Still, Robert A. Warr and William A. Stancer.

Dave Dabney in Albuquerque has finished his shop with the exception of a spray room and a satisfactory heating plant. These should be done soon when the heating plant, of course, will not be needed for some time. Several pair of one-way streets have been put in operation in the city.

Howard Williams has a tough intersection that he has been working on with Willard Kemp. If anyone in the Western Section knows how to make Salt Lake drivers observe a one-way street entrance, his advice would be appreciated. These advisers must remember that homicide is illegal in Utah.

Ellis Mathes has secured such a fine staff of assistants that he can spend most of his time fixing his driveway and hunting new places to fish.

Ted Forbes celebrated his birthday on the 21st of May by securing several months advance salary and buying fillet mignons for his wife and admiring friends.

Los Angeles City voted on Charter Amendments on the May 29th election. These amendments will decide whether many members of the Western Section now employed in the Los Angeles City Hall will be buried in Potter's Field or live to a ripe old age on a very comfortable pension.

Gene Maier of Houston, Texas, will visit Los Angeles soon to make sure California can provide suitable entertainment for Texas delegates to the ITE convention in September.

Alex Napier, Traffic Engineer for the City of Long Beach, has been called back in the service. Alex will be expected to make sure that the Russians do not destroy the town of North Richland, Washington. It seems that our government takes much better care of the Northwest than it does any other part of the United States.

Your Secretary-Treasurer forgot to advise that he was made a "proud papa" on May 13th when Diane Louise Head arrived weighing 8 lbs., 8½ oz. Mother and daughter are doing fine and *yours truly* is beginning to get used to the bi-nightly sojourns with the bottle.

Note the change in my address of from P. O. Box 30. It would be appreciated if you would change your records to State Highway Building, Salem, Oregon.

Reported by J. Al. Head
Secretary-Treasurer

1951 ITE Annual Meeting

September 23-27

Los Angeles, California

Ambassador Hotel

Make your plans *now* to attend this worthwhile and enjoyable affair.

When You Change Your Address

. . . please notify us promptly. Your copies of "Traffic Engineering" will then reach you without delay and without interruption.—Traffic Engineering Magazine, Strathcona Hall, New Haven 11, Conn.

Personalities . . .

JAMES STANNARD BAKER (Assoc. Mem., ITE) was born in New York in 1899 and raised in Michigan and Massachusetts. He says he has been in and out of engineering several times since he was graduated from the University of Wisconsin in 1922 as an electrical engineer.

Traffic signals were considered part of street lighting when he went to work for the General Electric Company after graduation. He worked on street lighting and traffic signals, both in the engineering department and later in advertising.

After that he worked for Fairbanks Morse and Company for three years in electrical advertising and later took a job in industrial engineering. In 1928 he became assistant traffic engineer with Earl J. Reeder under Sidney Williams at the National Safety Council and worked on traffic surveys in Reading, Pa.; Great Falls, Mont.; and San Antonio, Tex. Soon he was devoting most of his time to special studies.

Stan published the first attempts to evaluate the affect on accidents of both through-streets and traffic signals. It became apparent to him that a great part of the traffic safety problem could not be solved by engineering alone, and that the people who drive the cars are an important element. In 1930 he was appointed chairman of the Council's Committee on the Driver and specialized in driver problems.

He wrote the first analyses of "Traffic Work of Police Departments" and "Traffic Courts and Violations Bureaus," and made critical studies of procedures for examining drivers for licensing. He visited Europe to find out, among other things, how they handled drivers.

The job of fleet engineer was added to his duties at the Safety Council in 1933. There was an upsurge in driver licensing from 1935 to 1941 when a score of states undertook the licensing of drivers and his services were made available for setting up driver licensing in six states. He also set up training or re-training for examiners of about 28 other states.

When the National Safety Council discontinued its driver licensing activities during the war, Baker was put in general administrative work. He left the Council in 1945 to spend a year as safety director with the Department of Street Railways in Detroit. Stan came to the Traffic Institute of Northwestern University as research director in 1946 and now considers himself a representative in the enforcement field of traffic engineers.

One of Stan's current interests, so strong it's almost a hobby with him, is the scientific investigation of traffic accidents, particularly from physical evidence. Many of his analyses begin with engineering calculations of the forces, weights, and speeds involved. From this work Stan has come to a firm conviction that "the information we now have on traffic accidents is grossly inadequate for purposes of engineering, enforcement, and education." He urges intensive investigation of at least a good sample of accidents to get information "as good as we have for most aircraft accidents."

Along this line Stan is trying to develop experimental methods of accident reporting on a new basis which will yield more precise evaluation of severity, personal injury, and property damage and will make expenditures for preventing accidents justifiable economically.

Photography has been one of Stan's hobbies for many years.

While Stan doesn't advocate taking chances while driving a car he loves to take a risk canoeing in "white water" or paddling an Eskimo Kayak. He used to do a lot of canoe cruising—down the Mississippi and in Europe, Florida, Maine, and Ontario. However, in the last few years, he says, increased family chores and the passing years have turned him toward more intellectual pursuits, such as participating in, and leading, Great Books discussions.

HOLDEN M. LEROY (Mem., ITE) graduated from Ogden Institute of Technology in 1927 in Electrical Engineering. After trying to draw plans for a builder of pre-fabricated greenhouses he gave up and in 1928 went to Alaska. For the next nine years he served on the staff of a Presbyterian Mission Boarding

School for Indians at Sitka. For five years he was Assistant Engineer. In this capacity he gained a very broad experience as the school had to be completely self-contained, even to having its own hydro-electric plant. The other four years he taught mathematics, science and other subjects in the high school. He met his wife, who also taught in the same school, and was married while in Alaska.

In 1937 they "came out" to the States. In 1939, he went to work for the City of Portland, Oregon, as Traffic Engineering Aide in the Traffic Engineering Bureau. His original interest in traffic engineering dates back to 1927 when he graduated from college. At about that time Portland was installing its first signals. Samples of different types were installed at intersections all over the downtown area. His interest was such that he wrote his thesis on Traffic Signal Control.

In 1940, he received a Fellowship at the Yale Bureau of Highway Traffic and was on leave from Portland for that school year. In 1941, one week after returning to Portland, he accepted a position as Assistant Traffic Engineer, in charge of traffic signals, with the Indiana State Highway Commission.

In 1943, Holden came to Detroit as Senior Assistant Traffic Engineer, again as signal engineer. At present he is Associate Traffic Engineer in charge of

the Traffic Control Division of the Detroit Traffic Engineering Bureau.

He is a registered professional engineer in Indiana and served on the Signal Committee of the *Institute* for several years. He is now Chairman of the Committee on Design of equipment. He also served on the review panel on the revision of the Handbook. In 1949-50 he served as President of the Michigan Section, ITE.

This year he became a *professor* at Wayne University in Detroit and has been teaching a graduate credit course in Traffic Engineering. He has two daughters, ages 8 and 5.

Yearbook Changes

CRANDALL, F. B. (Mem.)
Traffic Engineer
Oregon State Highway Department
State Highway Building
Salem, Oregon

HEAD, J. AL. (Mem.)
Assistant Traffic Engineer
Oregon State Highway Department
State Highway Building
Salem, Oregon

HOLMES, ROBERT S. (Mem.)
704 Gilbert Street
Apartment 4
Takoma Park, Maryland

KELLY, ROBERT J. (Jun.)
1236 West 98th Street
Chicago 43, Illinois

KLAPPROTH, WALTER H. (Mem.)
Traffic Engineer
Municipal Building
Austin, Texas

KUNZ, FOSTER M.
819 Larch Avenue
Takoma Park 12, Maryland

MANNING, FRED J. (Assoc.)
Route 1, Box 876
Flagstaff, Arizona

OLSON, MAURICE C. (Jun.)
4720 Crown Avenue
La Canada, California

QUIMBY, WARREN S. (Jun.)
768 Forest Avenue
Larchmont, New York

RICH, MARSHALL M. (Jun.)
2902 O'Berry Street
Raleigh, North Carolina

WILKIE, LEO G. (Assoc.)
130 North Wells Street
Chicago 6, Illinois

ZIDES, MURRAY (Jun.)
28 Bellevue Court
Regina, Sask, Canada

Member Change of Title

McEACHERN, COOPER (Jun.)
Assistant Traffic Engineer
Department of Traffic and Transp.
Room 902, City Hall
Houston, Texas

New Appointments . . .

Appointment of ROBERT H. HARLESTON JR. (Jr. Mem., ITE) as traffic engineer in the Accident Prevention Department of the Association of Casualty and Surety Companies was announced recently by J. Dewey Dorsett, general manager. Mr. Harleston, formerly resident traffic engineer in Columbia, S. C., with a management consultant firm, joined the department's public safety division staff on June 1 upon completion of a one-year course at Yale University's Bureau of Highway Traffic.

Mr. Harleston's duties will include technical and administrative work seeking to stimulate effective use of sound traffic engineering techniques and related traffic safety principles to reduce accidents and alleviate traffic congestion at state and local levels. As a transportation and safety specialist, he will conduct studies in traffic engineering projects which have saved lives and prevented injury and property damage. He will endeavor through the Association's publications to apply these lessons broadly throughout the nation, according to Julien H. Harvey, manager of the Accident Prevention Department.

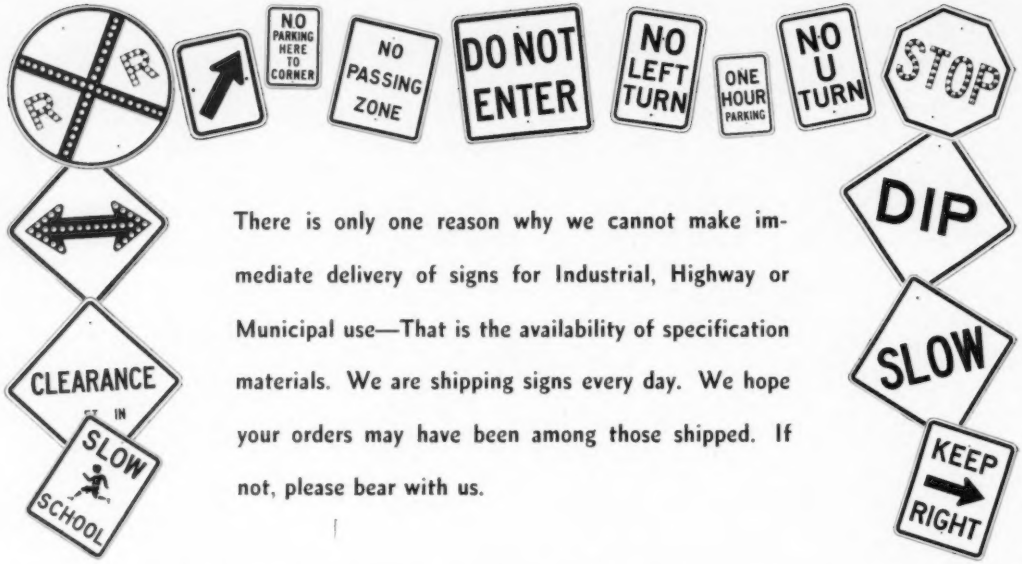
Mr. Harvey, who was recently honored by the Institute of Traffic Engineers for his contributions to the profession of traffic engineering, said Mr. Harleston's appointment emphasizes the importance the Association has attached to the growing science of traffic engineering. The "Getting Results Through Traffic Engineering" series of monthly bulletins, started in 1939 to encourage solution of traffic and accident problems by engineers, and now reaching more than 3,000 engineers and traffic officials regularly, will be among the publications handled by Mr. Harleston.

A native of Charleston, S. C., Mr. Harleston attended Duke University, the University of Texas and the University of Maryland, where he received his Bachelor of Science degree in 1948. He was with the U. S. Department of Agriculture in 1937 after serving with the U. S. Engineering Department, and in 1945 was a civil engineering aide with the War Department. He is an Associate Editor of "Traffic Engineering" magazine.

RUSSELL G. BATES (Assoc. Mem., ITE) was recently appointed Resident Engineer by the Automotive Safety Foundation to conduct a "Needs" study of state highways, county roads, and city streets in the State of North Dakota.

Mr. Bates had previously been in the employ of the State of Washington Department of Highways for twenty-odd years and for the past five years was in complete charge of all planning survey activities of the department.

An interesting side-note is the fact that when Mr. Bates first joined the Washington Department of Highways he was associated with Mr. Carl Fritts who was then employed in the department. His new appointment as Resident Engineer was made by Mr. Fritts, who is now Vice-President in Charge of Field Engineering of the Automotive Safety Foundation.

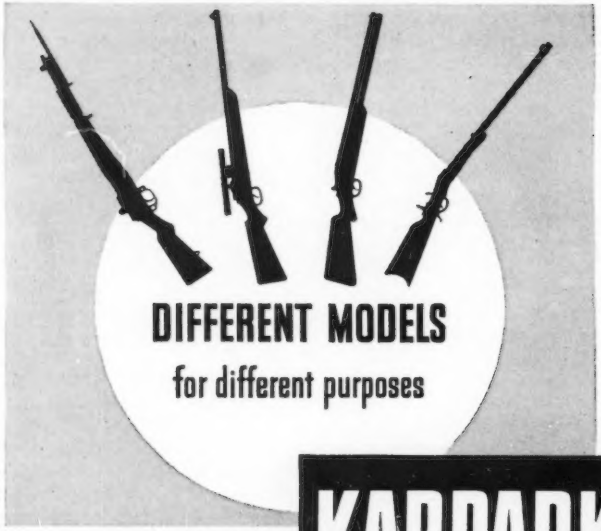


There is only one reason why we cannot make immediate delivery of signs for Industrial, Highway or Municipal use—That is the availability of specification materials. We are shipping signs every day. We hope your orders may have been among those shipped. If not, please bear with us.

MANUFACTURED BY

MIRO-FLEX CO., INC.

1824 EAST SECOND STREET—WICHITA, KANSAS



DIFFERENT MODELS
for different purposes

The "First Family" of Parking Meters

KARPARK
A METER FOR EVERY PARKING NEED

THE WISE CHOICE

Write for data to THE KARPARK CORPORATION
CINCINNATI 6, OHIO

The Steel Head SUPERIOR
Supreme in strength; in resistance to damage and vandalism.

The Low Cost HUSKY
Makes Karpark depend ability available at a minimum investment.

The Versatile TWIN-O-MATIC
One installation times two cars; has every wanted feature.

The Adaptable UNIMATIC
Takes care of any parking situation—beautifully and efficiently.

Professional Service Directory

PALMER AND BAKER, INC.
CONSULTING ENGINEERS
For Problems of Transportation
Subaqueous Vehicular Tunnels — Rock Tunnels — Utility Tunnels — Bridges
Grade Separations — Highways — Airports — Traffic Studies
Parking Problems — Waterfront and Harbor Structures
Complete Material, Chemical and Soils Laboratories
MOBILE, ALABAMA

JENKINS, MERCHANT & NANKIVIL
Consulting Engineers
Municipal Improvements — Sewerage
Power Development — Water Systems
Traffic Surveys — Industrial Plants
Flood Control — Recreational Facilities
Airports — Investigations and Reports
805 East Miller Street
Springfield, Illinois

RAMP BUILDINGS CORPORATION
PLANNING CONSULTANT
SINCE 1920
PARKING & AUTOMOTIVE SERVICE FACILITIES
MUNICIPAL PROGRAMS — PRIVATE PROJECTS
Surveys — Reports — Design — Economics — Finance — Appraisals
230 Park Avenue :: New York 17, N. Y.

DE LEUW, CATHER & COMPANY
CONSULTING ENGINEERS
Transportation, Public Transit and Traffic Problems
Subways, Railroads, Industrial Plants
Power Plants, Grade Separations,
Expressways, Tunnels, Municipal Works
150 N. Wacker Drive, Chicago 6, Ill.
79 McAllister St., San Francisco 2, Cal.

EDWARDS, KELCEY and BECK
CONSULTING ENGINEERS
Surveys — Reports — Economic Studies — Design — Supervision
Transportation — Traffic — Parking — Terminals — Port and Harbor Works
Highways — Expressways — Grade Separations — Tunnels
Bridges — Water Supply — Management
3 William Street, Newark 2, N. J. • 250 Park Avenue, New York 17, N. Y.

PARSONS, BRINCKERHOFF, HALL & MACDONALD
Engineers
Airports, Bridges, Tunnels, Highways,
Traffic & Transportation Reports
Subways, Foundations, Harbor Works,
Valuations, Power Developments,
Industrial Buildings,
Dams, Sewerage, Water Supply
51 Broadway, New York 6, N. Y.

GANNETT FLEMING CORDDRY and CARPENTER, INC.
---ENGINEERS---
CONSULTING SERVICES FOR TRAFFIC, PARKING and TRANSPORTATION PROBLEMS
City Planning — Highways — Bridges — Flood Control
Water Supply — Sewerage — Industrial Waste — Garbage Disposal
Appraisals — Investigations — Management
600 NO. 2nd STREET HARRISBURG, PA.
Pittsburgh, Pa. Scranton, Pa. Daytona Beach, Fla. Medellin, Colombia, S. A.

YOUR CARD
could be set in this space at a very reasonable rate.
If interested, please write:
TRAFFIC ENGINEERING
211 Strathcona Hall
New Haven 11, Connecticut

Index to Advertisers

The revenue derived from the sale of advertising space assists the **Institute** in publishing TRAFFIC ENGINEERING on a regular monthly basis. The manufacturers listed below will be glad to cooperate with products and services which will be helpful to you in developing your traffic engineering and public improvement program.

AUTOMATIC SIGNAL COMPANY..... 325
CATAPHOTE CORPORATION..... 326
DUAL PARKING METER COMPANY..... 328
EAGLE SIGNAL COMPANY..... 2nd Cover
GROTE MANUFACTURING COMPANY..... 351
HRUBETZ & BUSHNELL..... 346
INDUSTRIAL ELECTRONICS..... 326
KARPARK CORPORATION..... 356
MIRO-FLEX COMPANY..... 356
PRISMO SAFETY CORPORATION.... 4th Cover
M. H. RHODES, INC. 330
STREETER-AMET..... 338
TRAFFIC SAFETY SUPPLY COMPANY.... 349
TUTHILL SPRING COMPANY..... 350

Joe Prismo outshines them all!

In the field of highway marking, Joe Prismo has always been the brightest boy in his class.

He's always known the *most* about the scientific subject of reflectivity and has done the *most* in applying it to center-lines and safety signs for the protection of human life.

His Alma Mater is The Prismo Safety Laboratories, the greatest institution in the history of highways for the study and research of showing the light to guide motorists right. Yes, in the field of highway marking, Joe Prismo has always made a shining mark.

Prismo Binder is engineered to impart a background of brilliance to the myriads of bright rays reflected from the myriads of Prismo Spheres that are crystal clear, glass globes of optical perfection. The greatest glow of longest sustained duration is the identification mark of Prismo markings.

Under a magnifying glass Prismo proves its "Klass" . . . with a capital "K"! The perfect roundness and clarity of "the little Lenses", tells Traffic Engineers that high grade Prismo glass gives maximum optical results when used with Prismo's super tough binder. And in performance, brilliant beams reflecting headlights' gleams, also tell the Traffic Engineer that Prismo has proudly done justice to his choice of Prismo specification in his safety planning.

The SPHERE of SAFETY

PRISMO SAFETY CORP.